Unity Network®
Interface Device (ID)
Service Manual

2009517-002 Revision A

GE Medical Systems
Information Technologies

gemedical.com

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1 Introduction

For your notes

Manual Information

Revision History

Each page of this document has the document part number and revision letter at the bottom of the page. The revision letter changes whenever the document is updated.

Revision	Date	Comment
A	20 November 2002	Initial release.

Manual Purpose

This manual supplies technical information for service representatives and technical personnel so they can maintain the equipment to the assembly level. Use it as a guide for maintenance and electrical repairs considered technician repairable. Where necessary the manual identifies additional sources of relevant information and technical assistance.

See the operator's manual for the instructions necessary to operate the equipment safely in accordance with its function and intended use.

Intended Audience

This manual is intended for service representatives and technical personnel who maintain, troubleshoot, or repair this equipment.

Naming Conventions

In this manual, the Unity Network Interface Device (ID) is referred to as the Unity Network ID connectivity device.

Definitions

Black text	Indicates keys on the keyboard, text to be entered, or hardware items such as buttons or switches on the equipment.
Italicized text	Indicates software terms that identify menu items, buttons, or options in various windows.
Ctrl+Esc	Indicates a keyboard operation. A (+) sign between the names of two keys indicates that you must press and hold the first key while pressing the second key once. For example, "Press **Ctrl+Esc**" means to press and hold down the **Ctrl** key while pressing the **Esc** key.
<**Space**>	Indicates you must press the spacebar. When instructions are given for typing a precise text string with one or more spaces, the point where the spacebar must be pressed is indicated as: <**Space**>. The purpose of the < > brackets is to ensure you press the spacebar when required.
Enter	Indicates you must press the "**Enter**" or "**Return**" key on the keyboard. Do not type "enter".

Safety Information

Responsibility of the Manufacturer

GE Medical Systems *Information Technologies* is responsible for the effects of safety, reliability, and performance only if:

- assembly operations, extensions, readjustments, modifications, or repairs are carried out by persons authorized by GE Medical Systems *Information Technologies*, Inc.;
- the electrical installation of the relevant room complies with the requirements of the appropriate regulations; and
- the device is used in accordance with the instructions for use.

General

This device is intended for use under the direct supervision of a licensed health care practitioner.

This device is not intended for home use.

Federal law restricts this device to be sold by or on the order of a physician.

Contact GE Medical Systems *Information Technologies* before connecting any devices or versions of devices not recommended in this manual to the connectivity device.

Parts and accessories used must meet the requirements of the applicable IEC 60601 series safety standards, and/or the system configuration must meet the requirements of the IEC 60601-1-1 medical electrical systems standard.

Periodically, and whenever the integrity of the device is in doubt, test all functions.

The use of ACCESSORY equipment not complying with the equivalent safety requirements of this equipment may lead to a reduced level of safety of the resulting system. Consideration relating to the choice shall include:

- use of the accessory in the PATIENT VICINITY; and
- evidence that the safety certification of the ACCESSORY has been performed in accordance to the appropriate IEC 60601-1 and/or IEC 60601-1-1 harmonized national standard.

If the installation of the equipment, in the USA, will use 240V rather than 120V, the source must be a center-tapped, 240V, single-phase circuit.

Warnings, Cautions, and Notes

The terms danger, warning, and caution are used throughout this manual to point out hazards and to designate a degree or level of seriousness. Familiarize yourself with their definitions and significance.

Hazard is defined as a source of potential injury to a person.

DANGER indicates an imminent hazard which, if not avoided, will result in death or serious injury.

WARNING indicates a potential hazard or unsafe practice which, if not avoided, could result in death or serious injury.

CAUTION indicates a potential hazard or unsafe practice which, if not avoided, could result in minor personal injury or product/property damage.

NOTE provides application tips or other useful information to assure that you get the most from your equipment.

Equipment Symbols

The following symbols appear on the equipment.

001

ATTENTION: Consult accompanying documents before using the equipment.

002

Equipotentiality

003

Power: **I** = ON; **O** = OFF

004

Medical Equipment
With respect to electric shock, fire and mechanical hazards only in accordance with UL 2601-1, and CAN/CSA C22.2 NO. 601.1.

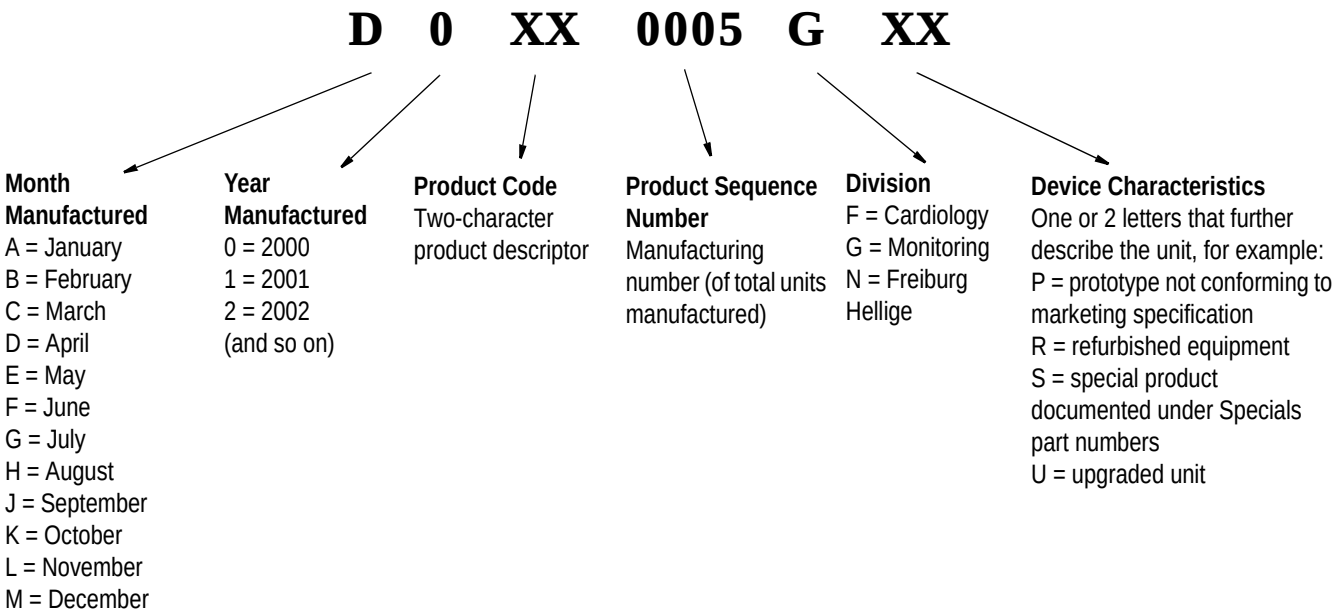
Service Information

Service Requirements

- Refer equipment servicing to GE Medical Systems *Information Technologies* authorized service personnel only.
- Any unauthorized attempt to repair equipment under warranty voids that warranty.
- It is the user's responsibility to report the need for service to GE Medical Systems *Information Technologies* or to one of its authorized agents.
- Failure on the part of the responsible individual, hospital, or institution using this equipment to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards.
- Regular maintenance, irrespective of usage, is essential to ensure that the equipment will always be functional when required.

Equipment Identification

Every GE Medical Systems *Information Technologies* device has a unique serial number for identification. The serial number appears on the product label of each unit.



For your notes

2 Equipment Overview

For your notes

System Components

System Operation

The Unity Network ID connectivity device acquires digital data from up to eight peripheral devices, processes this data, and transmits the formatted data to the monitoring network. The data can then be displayed on a clinical information system, central station, and/or GE Medical Systems *Information Technologies* patient monitor.

NOTE

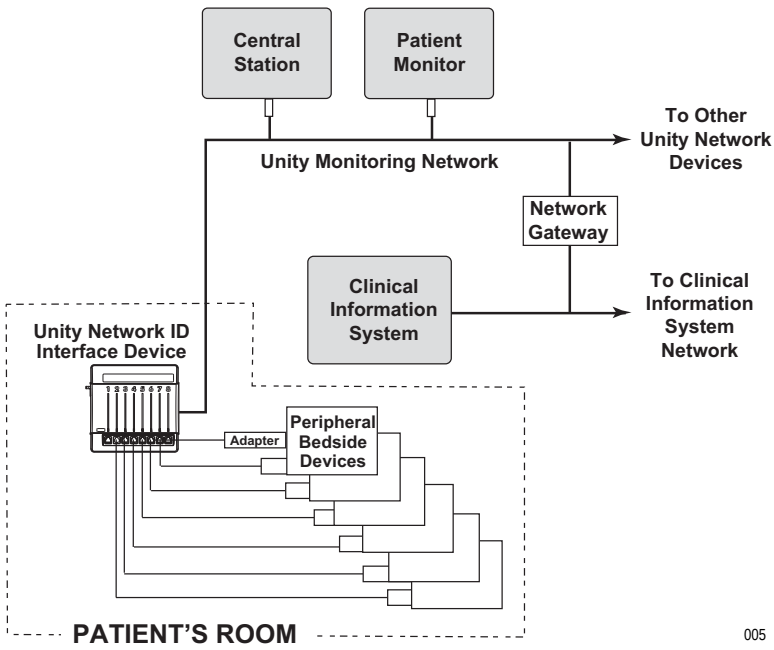
Contact your GE Medical Systems *Information Technologies* representative for information about the monitors and software versions that are capable of receiving and displaying information from a Unity Network ID connectivity device.

Peripheral devices include anesthesia machines, continuous cardiac output monitors, gas analyzers, IV pumps, patient monitors, pulse oximeters, transcutaneous monitors, urometers, and ventilators.

The Unity Network ID connectivity device operates in either a stand-alone mode or a peripheral mode of operation.

Stand-Alone Mode

In the stand-alone mode, the Unity Network ID connectivity device provides data via the Unity Network to one or more Unity Network devices capable of viewing remote patient data.



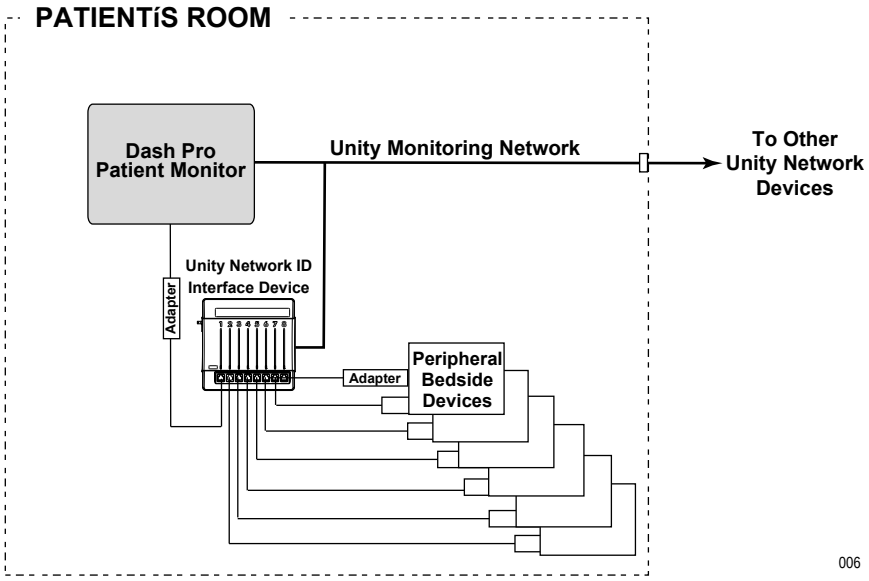
The diagram is an example of patient data flow from peripheral devices to a clinical information system:

- Each peripheral device requires a unique interface adapter to obtain the patient data.
- Each adapter is connected by cabling to one of the eight peripheral device connectors on the Unity Network ID connectivity device.
- The monitoring network delivers the patient data to a network gateway that segregates the monitoring network from the clinical information system. The gateway separates the real-time network and the transaction-oriented network to assure reliable delivery of real-time data.
- The gateway sends the patient data to a clinical information system or other parts of the hospital's enterprise-wide network.

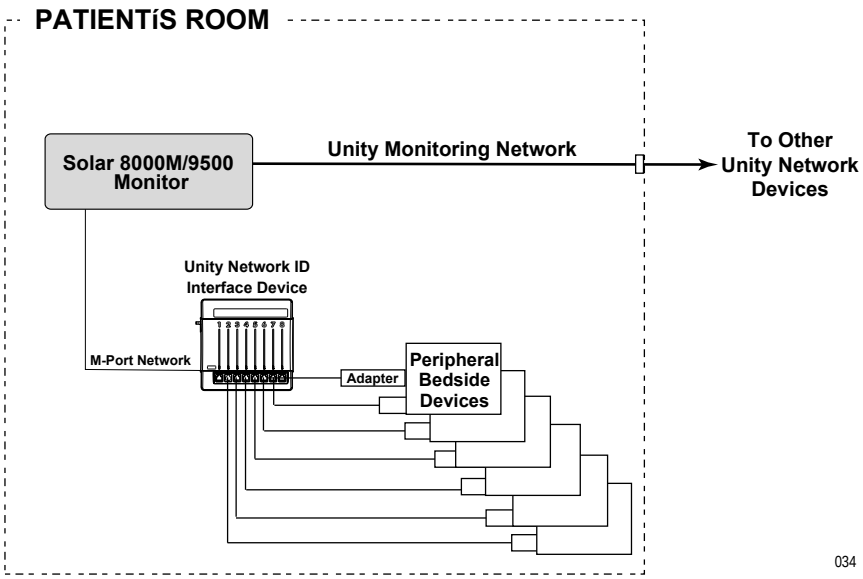
Peripheral Mode

In the peripheral mode, the Unity Network ID connectivity device provides its collected data to only one Unity Network device, such as a GE patient monitor. While in this mode, other viewing devices on the Unity Network cannot view data collected by the Unity Network ID connectivity device. This mode of operation allows for data collected by non-GE Medical Systems *Information Technologies* equipment to be merged with data collected locally by a GE patient monitor.

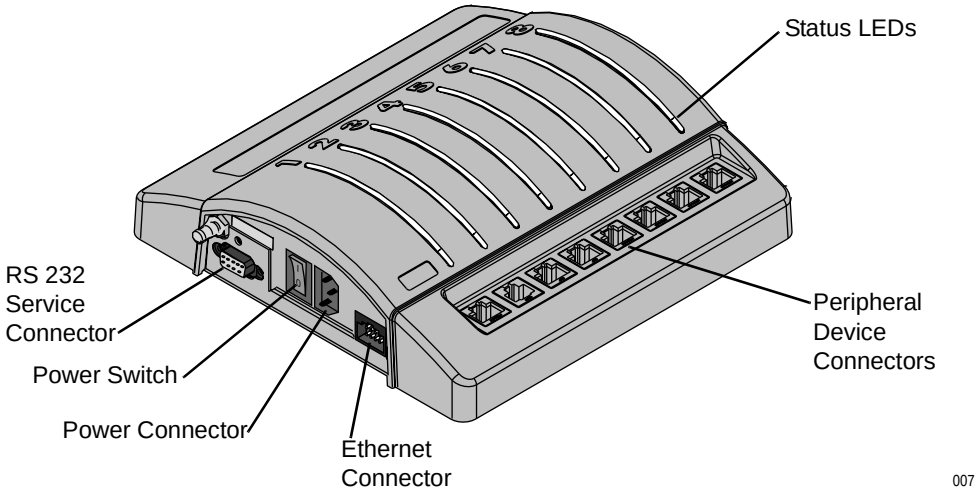
Peripheral Mode Operation Using Dash Pro Patient Monitor



Peripheral Mode Operation Using Solar 8000M/9500 Monitor



Unity Network ID Components

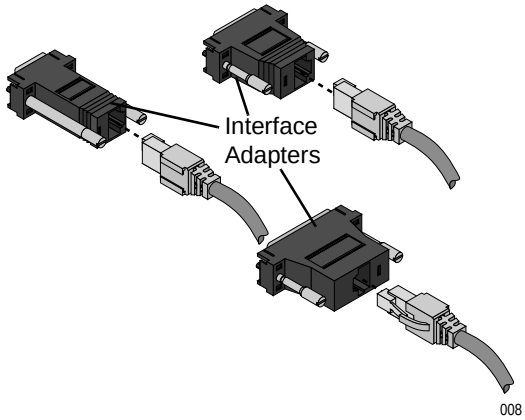


The Unity Network ID connectivity device components include:

- RS 232 Service Connector—A dedicated serial port to communicate with a personal computer or terminal for configuration and programming.
- Status LEDs— Eight bi-color light-emitting-diodes that indicate proper system function, peripheral device compatibility problems, and communication errors or delays.
- Peripheral Device Connectors—Communication ports for eight peripheral devices.
- Ethernet Connector—A single communication port for the monitoring network.
- Power Connector—A receptacle for the AC power cord.
- Power Switch—Power on/off switch with indicator light.

Interface Adapters

CAUTION
Use of the wrong interface adapter may cause improper operation of the supported peripheral device. Verify that the interface adapter on the peripheral device is the correct adapter and is operational before the device is used on a patient.



Peripheral devices not manufactured by GE Medical Systems *Information Technologies* require a special interface adapter for connection to the Unity Network ID connectivity device. Dash Pro 3000/ 4000 monitors require a special interconnect cable with integral interface adapter. Interface adapters are available with different connector pin configurations and are specifically programmed to allow communication between the specific peripheral device and the Unity Network ID connectivity device.

NOTE
Solar 8000M/9000 monitors do not require the use of interface adapters for connection to the Unity Network ID connectivity device. These monitors utilize a direct Ethernet connection. Refer to the Installation chapter of this manual for further information.

NOTE
If your peripheral device software is updated, please complete and fax the software upgrade notification page found in this manual.

Supported Devices

This section provides the list of supported peripheral devices compatible with the Unity Network ID connectivity device. The devices are organized by type, and part numbers for the corresponding interface adapter are provided.

NOTE

Due to continuous product innovation, this list may no longer be comprehensive. If necessary, call your sales representative for a current list of supported peripheral devices.

Refer to the host monitor operator documentation for further information about supported devices and monitored parameters.

Anesthesia Machines

Supported Anesthesia Machines					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
North American Dräger Medical Narkomed 2B Anesthesia Workstation	Narkomed 2B: 2.06 Narkomed 2C: 1.11E Narkomed 3: CO2/Agt: 1.02, O2 Med: 1.04, Oximeter: 1.07, Spiromed: 1.04, Sphymomed: 2.05, Baromed: 1.06, CCC: 1.01, ECC: 1.04, Alarms CRT: 2.02 Narkomed 4: 1.25 Comm hub: 2.01 Vitalert 2000: 2.05 Vitalert 3200: 1.08	—	VNT	V1A	420915-016
North American Dräger Medical Narkomed 2C Anesthesia Workstation		VNT Flow, VNT Pres	VNT	V1A	
North American Dräger Medical Narkomed 2C (with CO2+Gas) Anesthesia Workstation		VNT Flow, VNT Pres, CO2 Exp	VNT, Gas, CO2	V1A	
North American Dräger Medical Narkomed 3 Anesthesia Workstation		CO2 Exp	VNT, Gas, CO2	V1A	
North American Dräger Medical Narkomed 4 Anesthesia Workstation		VNT Flow, VNT Pres, CO2 Exp	VNT, Gas, CO2	V1A	
Dräger Medical Cato Anesthesia Machine	Dräger Medibus Version 3.00 and Device Version 2.02	VNT Pres, CO2 Exp	VNT, Gas, CO2	V1A	420915-021
Dräger Medical PM8050 Anesthesia Machine					
Dräger Medical Cicero PM8060 Anesthesia Machine (25 Pin)	Dräger Medibus Version 3.00 and Device Version 2.00	VNT Pres, CO2 Exp	VNT, Gas, CO2	V1A	420915-036
Dräger Medical Cicero PM8060 Anesthesia Machine (9 Pin)	Dräger Medibus Version 3.00 and Device Version 2.00	VNT Pres, CO2 Exp	VNT, Gas, CO2	V1A	420915-051
Dräger Medical Julian Anesthesia Machine	Dräger Medibus Version 3.00 and Device Version 1.00	VNT Pres, CO2 Exp	VNT, Gas, CO2	V1A	420915-038
Dräger Medical Cicero EM Anesthesia Machine (25 Pin)	Dräger Medibus Version 3.00 and Device Version 2.00	VNT Pres, CO2 Exp	VNT, Gas, CO2	V1A	420915-039
Dräger Medical Cicero EM Anesthesia Machine (9 Pin)	Dräger Medibus Version 3.00 and Device Version 2.00	VNT Pres, CO2 Exp	VNT, Gas, CO2	V1A	420915-044

Continuous Cardiac Output Monitors

Supported Continuous Cardiac Output Monitors					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
Baxter Edwards Vigilance CCO Monitor	Device v4.42, v5.02, v5.3	—	CCO, SVO2	V1A	420915- 024
Baxter Edwards Vigilance CCO Monitor (European)	Device v4.42, v5.02, v5.3	—	CCO, SVO2	V1A	420915-052
Abbott Laboratories Q-Vue Monitor	Q-Vue CCO Computer: Version 1.08, Application Version 1.08, and BIOS Version 1.03	—	CCO	V1A	420915-025
Abbott Laboratories Q2 Monitor	Q2 Computer: Version 3.00, Application Version 3.00, and BIOS Version 1.07	—	CCO, SVO2	V1A	

Gas Analyzers

Supported Gas Analyzers					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
Datex Capnomac Ultima Gas Analyzer	882916-2.0 882916-3.1	—	Gas, CO2	V1A	420915- 004
Datex Ohmeda Rascal II Anesthetic Gas Analyzer	1.11 & 1.23	—	Gas, CO2	V1A	420915-014
Datex Ohmeda 5250 RGM (Respiratory Gas Monitor)	Display: 5.1 & 6.0 Signal: 5.007 & 6.007 ACX: 1.2	—	Gas, CO2	V1A	420915-015
Nellcor Puritan Bennett N-1000 Pulse Oximeter	Display 2.03.03 (or 2.3)	—	Gas, CO2, SPO2x	V1A	420915-034
Nellcor Puritan Bennett N-2500 Pulse Oximeter (N-1000 and N-1500 combined)	N-1000 Display: 2.03.03 (or 2.3) N-1500: 1.02.03 (or 1.2)	—	Gas, CO2, SPO2x	V1A	

Infusion Pumps

Supported Infusion Pumps					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
Abbott Laboratories LifeCare 5000 Concurrent Flow Infusion System	1.6	—	IV	V1A	418265-026
Baxter Flo-Gard 6201 IV Pump	1.04–1.13	—	IV	V1A	418265-027
Baxter Flo-Gard 6301 IV Pump	1.08–1.11	—	IV	V1A	
Alaris Medical IVAC 560	0.21	—	IV	V1A	418265-028
Alaris Medical IVAC 570	0.09		IV	V1A	
Alaris Medical IMED Gemini PC-1 IV Pump	7.11	—	IV	V1A	418265-029
Alaris Medical IMED Gemini PC-2 IV Pump	2.49a	—	IV	V1A	
Alaris Medical IMED Gemini PC-2TX IV Pump	2.31	—	IV	V1A	
Alaris Medical IMED Gemini PC-4 IV Pump	1.31	—	IV	V1A	

Patient Monitors

Supported Patient Monitors					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
Hellige SMU EVO Patient Monitor	8.0E	—	Gas, CO2, SpO2x, TCO2, TCx, ECGx, RRx, NBPx, BPx, TMPx, BTCOx	V1A	420915- 032
Siemens SC9000 Patient Monitor	None Specified	—	CO2, SPO2x, ECGx, RRx, NBPx, BPx, TMPx, BTCOx	V1A	420915-035

Pulse Oximeters

Supported Pulse Oximeters					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
Nellcor Puritan Bennett N-200 Pulse Oximeter	Monitor Version 2.9 Powerbase Version 2.73	—	SPO2x	V1A	420915- 033
Nellcor Puritan Bennett N-395 Pulse Oximeter	1.7.0.0, 1.8.0.0, 1.9.0.2, 1.9.3.0	—	SPO2x	V1A	420915-069
Nellcor Puritan Bennett N-1000 Pulse Oximeter	Display 2.03.03 (or 2.3)	—	Gas, CO2, SPO2x	V1A	420915-034
Nellcor Puritan Bennett N-2500 Pulse Oximeter (N-1000 and N-1500 combined)	N-1000 Display: 2.03.03 (or 2.3) N-1500: 1.02.03 (or 1.2)	—	Gas, CO2, SPO2x	V1A	

Transcutaneous Monitors

Supported Transcutaneous Monitors					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
Novametrix Medical 840/860 TCO2M Monitors	3.3 TCO2M: eng-860-14	—	TCO2	V1A	420915- 022
Radiometer Medical TINA (TCM3) TCO2 Monitor	22	—	TCO2	V1A	420915-023

Urometers

Supported Urometers					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
Bard CritiCore 210/220 Urimeters	Any	—	UO	V1A	420915- 030

Ventilators

Supported Ventilators					
Supported Device	**Supported Device Software Version(s)**	**Waveform**	**Parameter**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interface Adapter**
Nellcor Puritan Bennett PB 840 Ventilator	4-070212-85-F (English)	—	VNT	V1A	420915-063
Nellcor Puritan Bennett 7200 A/E/AE/SPE Adult Ventilators	26300-85-J (English) 24300-85-F (English) 26300-85-N (English) 26321-85-J (Spanish) 26322-85-E (French) 26323-85-G (German) 26324-85-K (Italian)	—	VNT	V1A	420915- 001

Supported Ventilators					
Nellcor Puritan Bennett Infant Star Neonatal Ventilator	46	—	VNT	V1A	420915-008
Nellcor Puritan Bennett Infant Star 500 Neonatal Ventilator	49 and 107	—	VNT	V1A	
Nellcor Puritan Bennett Infant Star 950 Neonatal Ventilator	107	—	VNT	V1A	
Nellcor Puritan Bennett Adult Star, Adult Star 1500, and Adult Star 2000 Ventilators	216 and 218	—	VNT	V1A	420915-009
Siemens Medical Servo Ventilator (SV) 300	COM-PROM V2.0 COM-PROM V2.01	VNT Flow, VNT Pres	VNT	V1A	420915-011
Siemens Medical Servo Ventilator (SV) 900 C/D/E	1.0 and 2.0 of Servo Computer Module 990	—	VNT	V1A	420915-002
Bear Medical Bear 1000 Ventilator	9.7 and A3.3	VNT Flow, VNT Pres	VNT	V1A	420915-005
Hamilton Medical Veolar Ventilator	E V31E.4 N31D.2 R030.0	VNT Flow, VNT Pres	VNT	V1A	420915-007
Hamilton Medical Amadeus Ventilator	A33X.0 N33A.6 R33A.0/ A33X.0 N33A.6 N01S.1	VNT Flow, VNT Pres	VNT	V1A	
Hamilton Medical Galileo Ventilator	GMP01.21b GCP01.202 GPT01.00	VNT Flow, VNT Pres	VNT	V1A	420915-060
Drager Medical Babylog 8000/8000SC Infant Care Ventilator	Device v3.02, v4.02, v4.03, v4.04, and v5.00 All with Medibus v3.00	VNT Flow, VNT Pres	VNT	V1A	420915-017
Dräger Medical Evita Intensive Care Ventilator	Dräger Medibus Version 3.0 and Device Version 1.0	VNT Pres	VNT	V1A	420915-040
Dräger Medical Evita 2 Intensive Care Ventilator	Dräger Medibus Version 3.0 and Device Version 1.0	VNT Pres, CO2 Exp	VNT, CO2	V1A	420915-041
Dräger Medical Evita 2 Dura Intensive Care Ventilator	Dräger Medibus Version 4.0 and Device Version 1.0	VNT Pres, CO2 Exp	VNT, CO2	V1A	420915-042
Dräger Medical Evita 4 Intensive Care Ventilator	Dräger Medibus Version 4.0 and Device Version 1.0	VNT Pres, CO2 Exp	VNT, CO2	V1A	420915-043
Datex-Ohmeda Aestiva 3000 Anethesia Ventilator	1.0	—	VNT	V1A	420915-050
Datex-Ohmeda 7800/7810 Anethesia Ventilators	1500-9001-000 CATV00557	—	VNT	V1A	420915-019

Supported Ventilators					
Datex-Ohmeda 7900 Anethesia Ventilator	2.8	—	VNT	V1A	420915-049
Bird VIP Infant-Pediatric, 6400ST, and 8400ST Ventilators	Any			V1A	420915-020

Technical Specifications

Due to continuous product innovation, specifications for the Unity Network ID connectivity device are subject to change without notice. The following specifications are accurate as of the date of this publication.

Performance Specifications

Main Processor	Motorola MC68EN360 25 MHz
Network	Type: Ethernet 10 BaseT
Indicators	Power: Green LED on AC switch Status LEDs: Eight bicolor LEDs ■ Solid green indicates OK ■ Any other condition (color or state) indicates caution
Device Inputs	Number: Eight devices EIA Standard: RS-232 Baud Rates: 22 standard baud rates 50-115.2k ■ 50, 75, 150, 200, 300, 450, 600, 900, 1200, 1800, 2400, 3600, 4800, 7200, 9600, 14.4k, 19.2k, 28.8, 38.4k, 57.6k, 115.2k Data Bits: 5 to 8 Stop Bits: 1 or 2 Parity: None, odd or even Connector: RJ-45 Device ID Facility: Interface adapter provides identification and connector adaptation for “plug and play”

Environmental Specifications

Power Requirements	Input voltage: 90 -264 V ac; 50/60 Hz; Single Phase Consumption: 7W Cooling: Natural Convention Heat Dissipation: 23.8 Btu/hr (7W)
Operating Conditions	Temperature: 10°C to 40°C (50°F to 104 °F) Humidity: 15% to 95% (noncondensing)
Storage Conditions	Temperature: –40°C to 70°C (40°F to 158 °F) Humidity: 15% to 95% (noncondensing)

Physical Specifications

Height	211 mm (8.3 in)
Width	213 mm (8.4 in)
Depth	66 mm (2.6 in)
Weight	1.1 kg (2.4 lbs)

Certification

Safety Standards	 Medical Equipment With respect to electric shock, fire and mechanical hazards only in accordance with UL 2601-1, and CAN/CSA C22.2 NO. 601.1. EC 60601-1 certified. CE marking for the 93/42 EEC Medical Device Directive.
Separation Device	The Unity Network ID connectivity device qualifies as a “Separation Device” as defined by the IEC 60601-1-1 Medical Electrical System Standard.

Classification

Type of protection against electrical shock	Class I
Degree of protection against electrical shock	Not Applicable
Degree of protection against harmful ingress of water	Ordinary Equipment (enclosed equipment without protection against ingress of water)
Degree of safety of application in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide	Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.
Method(s) of sterilization or disinfection recommended by the manufacturer	Not Applicable
Mode of operation	Continuous operation

3 Installation

For your notes

General Information

Installation Procedures

This chapter provides a sequence of installation procedures to successfully install a Unity Network ID connectivity device. These procedures must be performed by a qualified biomedical technician:

1. Configure the connectivity device with the correct settings for the installation site.
2. Complete the hardware connections for the connectivity device to operate in stand-alone mode or peripheral mode as determined by the requirements of the installation site.
3. Complete the communication setup for each peripheral device and make the hardware connections to the connectivity device.
4. Complete the final checkout and safety testing before putting the connectivity device into service.

Special Equipment

The following equipment is required to configure the connectivity device:

1. Computer with the following minimum requirements:
   - Windows 98SE, Windows 2000, or Windows NT,
   - RS 232 serial port, and
   - HyperTerminal program (included with Windows operating system).
2. RS 232 cable assembly.

Communication Tips

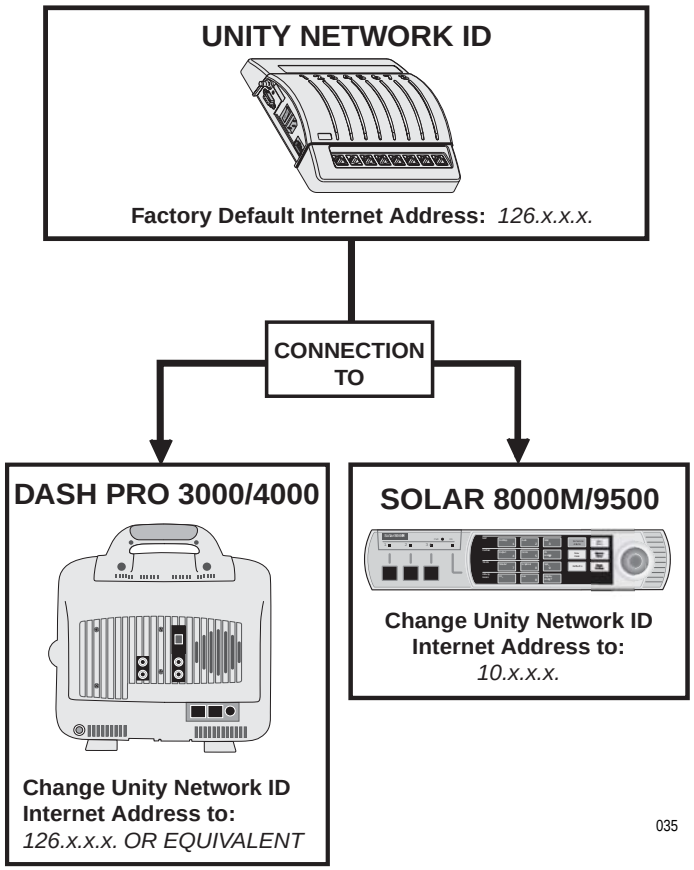
If you have problems with communication between the Unity Network ID connectivity device and the computer, try the following:

- If the wrong configuration data was entered, exit the menu. Re-enter the menu and type over the old data.
- If the communication is interrupted, power cycle the unit. Type **service** and press the **Enter** key at the computer.

Changing Internet Addresses

WARNING
Duplication of an Internet address on the network will cause lost data on both devices sharing the address. Always consult the installation site's biomedical department for the correct Internet address if the monitoring network being utilized is different than the factory default address.

The Unity Network ID connectivity device Ethernet port is programmed from the factory with a *126.x.x.x* default Internet (IP) address. Some installation sites may be operating with a different Internet address on the monitoring network. Changing the setting of the factory default address for functionality on a different Internet address should be completed under close consultation with the site's biomedical department to ensure no duplication of addresses.



If the connectivity device will be used to provide data to a Solar 8000M/9500 monitor, the network address for the Unity Network ID must always be changed to a *10.x.x.x* address.

If the connectivity device will be used with Dash 3000/4000 patient monitors, the network address for the Unity Network ID must be set to the *126.x.x.x* default address or the installation site's equivalent address.

Configuration

WARNING
Configuration must be performed by a qualified biomedical technician only. Misuse of the programming menus or using incorrect configuration settings can result in lost or inaccurate patient data or misassociation of data when the unit is put into service.

Always consult the installation site's biomedical department for the correct configuration settings if factory default settings must be changed.

Use this procedure to configure the Unity Network ID connectivity device.

1. Complete the RS 232 cable and power connections for your computer and the Unity Network ID connectivity device to run the HyperTerminal application. See the Technical Information chapter in this manual if necessary. Do not connect to the monitoring network at this time.
2. Run the HyperTerminal application.
3. Hold down the **B** key while cycling power to the Unity Network ID connectivity device. Wait for the flashover connection to complete and the *BOOT SERVICE MENU* to appear.

NOTE
To select individual options from a menu or submenu list, type the number that appears in front of the option, then press **Enter**. If you wish to accept a menu default setting, press **Enter** without changing the setting.

4. For all installations outside France, verify the *Country Selection:* option is set to *DEFAULT*. If it is necessary to enable the France homologation mode:
   - Select the *Country Selection:* option.
   - Select *FRANCE*.

   NOTE
   France homologation mode will change the parameter default alarm levels. See the operator's manual for further information.
5. Verify the default setting for *Set Language:* is correct for the installation site. If the default setting is not correct:
   - Select the *Set Language:* option.
   - Select the correct language option from the menu list.
6. Select the *Exit* option. When not connected to the network, the system will automatically search for a file server to open the Boot Service Menu again. Cycle power to the connectivity device at this time.
7. Type **service**, and press **Enter** to access the *SERVICE MENU*.

8. Select the *Location Menu* option.
9. Type the unit name, and press **Enter**.
10. Type the bed name, and press **Enter**.
11. Verify the unit name and bed name now appear in parentheses next to the *Location Menu* on screen.

    NOTE

    The system automatically places a plus (+) sign after the bed name to distinguish the unit as a Unity Network ID connectivity device rather than a monitor on the network.

12. Verify the default setting for *Barometric Pressure* is correct for the installation site. If default setting is not correct:
    - Select the *Barometric Pressure* option.
    - Type the correct barometric pressure.
    - Press **Enter**.
13. Select the *Set the Time and Date* option. Verify the on screen time and date settings are correct.

    If time is not correct:
    - Select the *Set the Time* option.
    - Type the correct hours, and press **Enter**.
    - Type the correct minutes, and press **Enter**.

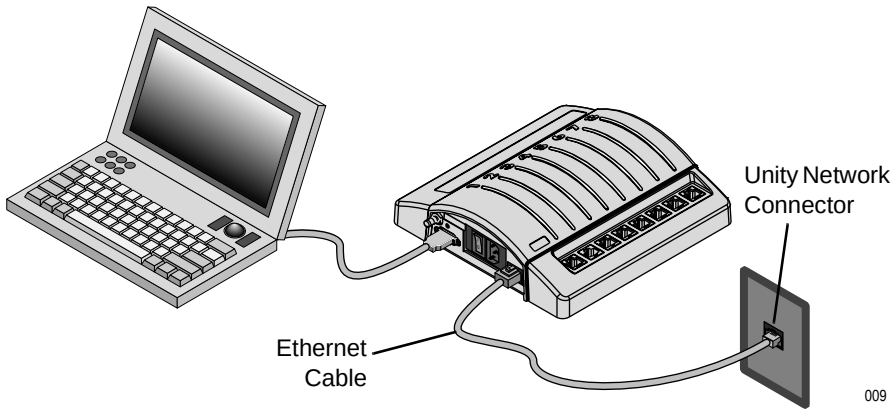
    If date is not correct:
    - Select the *Set the Date* option.
    - Type the correct year, and press **Enter**.
    - Type the correct month, and press **Enter**.
    - Type the correct day of month, and press **Enter**.
14. Select the *Change Internet Address* option. Refer to "Changing Internet Addresses" in this chapter for further information.

    WARNING

    Duplication of an Internet (IP) address on the network will cause lost data on both devices sharing the address. Always consult the installation site's biomedical department for the correct Internet address if the monitoring network being utilized is different than the factory default address.

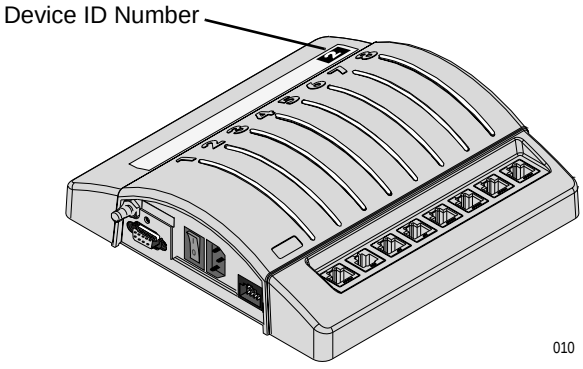
15. Select *no*, *yes*, or *change to default* as required for your application. If changing the address, verify the *New IP adr:* is displayed on screen.
16. Press **Enter** (accept the *Exit* default) to return to *SERVICE MENU*.
17. Press **Enter** to exit *SERVICE MENU*.
18. Turn off the connectivity device.

19. Close the HyperTerminal application and shut down the computer.



20. Connect the Ethernet cable to the connector marked **Ethernet** on the connectivity device. Connect the other end of the cable to the assigned network connector for the unit and bed configured in the connectivity device.
21. Make sure no peripheral devices are connected to the connectivity device at this time.
22. Turn on the connectivity device.

WARNING
To avoid misassociation of patient data at the clinical information system or central station, you MUST verify the Unity Network ID connectivity device is assigned to the correct patient. Use the Unity Network ID connectivity device number at the clinical information system or central station when the unit is transferred to a new patient.



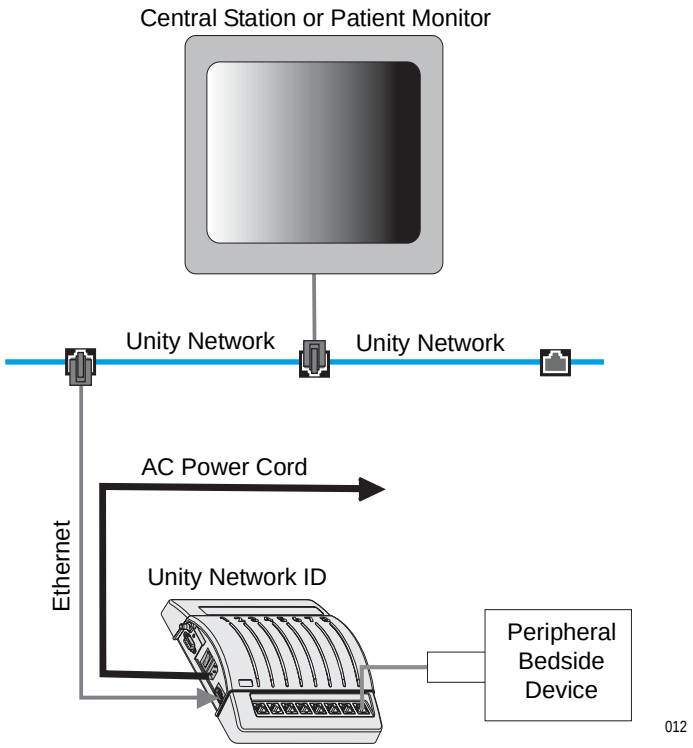
23. Verify the device ID number located on the cover matches the ID number displayed on screen at the clinical information system or central station.
24. Verify no LED errors appear, indicating duplicate network addresses or other problems.
25. Turn off the connectivity device.

26. Disconnect the RS 232 cable from the connectivity device.
27. Repeat the configuration procedure for each unit.
28. Proceed with the applicable hardware connections described in this chapter.

Connections for Stand-Alone Mode of Operation

Complete the configuration procedure for each Unity Network ID connectivity device before proceeding.

Use this procedure to complete the proper connections if stand-alone operation is desired.



1. Connect the Ethernet cable to the connector marked **Ethernet** on the side of the Unity Network ID connectivity device.
2. Connect the other end of the Ethernet cable to the Unity Network Ethernet hub or wall plate.
3. Connect the power cord to the power connector on the Unity Network ID connectivity device. Plug the cord into an AC power outlet.
4. Turn the power switch on the Unity Network ID connectivity device to the on (**I**) position. Verify the switch is illuminated green.
5. Connect the peripheral device(s) to the Unity Network ID connectivity device. Refer to Peripheral Device Connections in this chapter.

Connections for Peripheral Mode of Operation

Complete the configuration procedures for each Unity Network ID connectivity device before proceeding.

The Unity Network ID connectivity device can be connected to certain GE Medical Systems *Information Technologies* patient monitors for peripheral mode of operation. Data can then be displayed on the monitor.

Monitor Requirements

Due to continuous product innovation, this list may no longer be comprehensive. If necessary, contact your GE Medical Systems *Information Technologies* representative for the latest list of compatible GE patient monitors and associated software and hardware requirements.

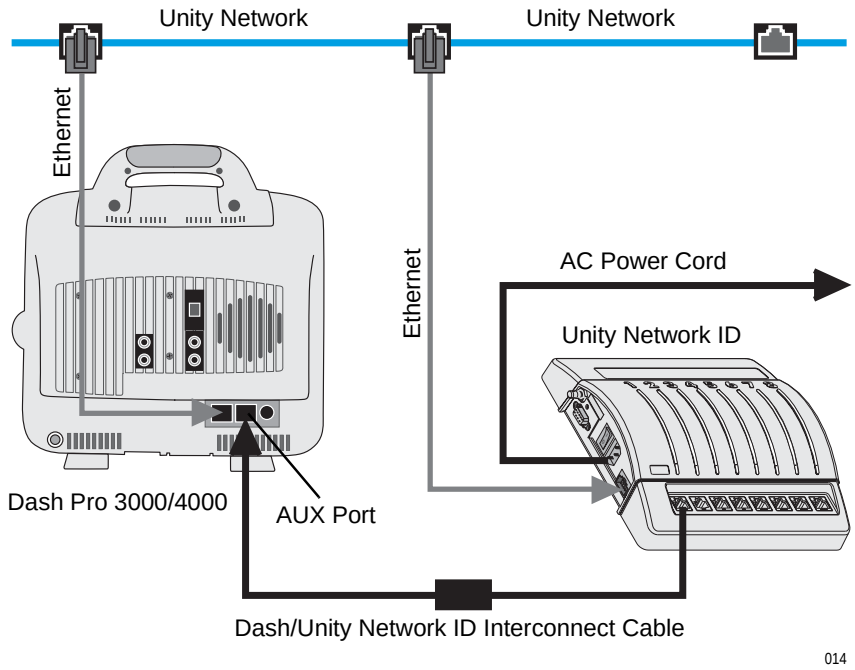
GE Patient Monitors			
Supported Device	**Minimum Patient Monitor Software**	**Minimum Unity Network ID Software For This Interface**	**Part Number For Interconnect Cable**
Dash Pro 3000/4000 Patient Monitors	Version 3A	V1A	2012196-001
Solar 8000M Monitor	Version 4A	V1A	Ethernet cable
Solar 9500 Monitor	Version 3A	V1A	Ethernet cable

Connection to Dash Pro 3000/4000 Monitors

NOTE

The Unity Network ID connectivity device CANNOT be interchanged between Dash and Solar monitors without first changing the Internet address in the connectivity device. See the site installation instructions in this chapter for further information.

Follow these instructions to connect the Unity Network ID connectivity device to the Dash monitor.



1. Connect the Ethernet network cable to the Ethernet connector at the back of the Dash monitor. Connect the other end of the network cable to the Unity Network Ethernet hub or wall plate.
2. Connect the Unity Network ID power cord to the power connector on the side of the connectivity device. Plug the power cord into an AC outlet, and turn the power switch to the on (**I**) position. Verify the switch is illuminated green.
3. Connect the Ethernet network cable to the **Ethernet** connector on the side of the Unity Network ID connectivity device. Connect the other end of the cable to the Unity Network Ethernet hub or wall plate.
4. Connect the Dash/Unity Network ID interconnect cable to the **AUX** port on the Dash monitor or Dash docking station. Connect the other end of the interconnect cable to one of the eight peripheral device connectors on the connectivity device.
5. Make sure the power cord is securely connected to the monitor, and plug it into an AC power outlet. Turn on power.
6. Connect the peripheral device(s) to the Unity Network ID connectivity device. Refer to Peripheral Device Connections in this chapter.

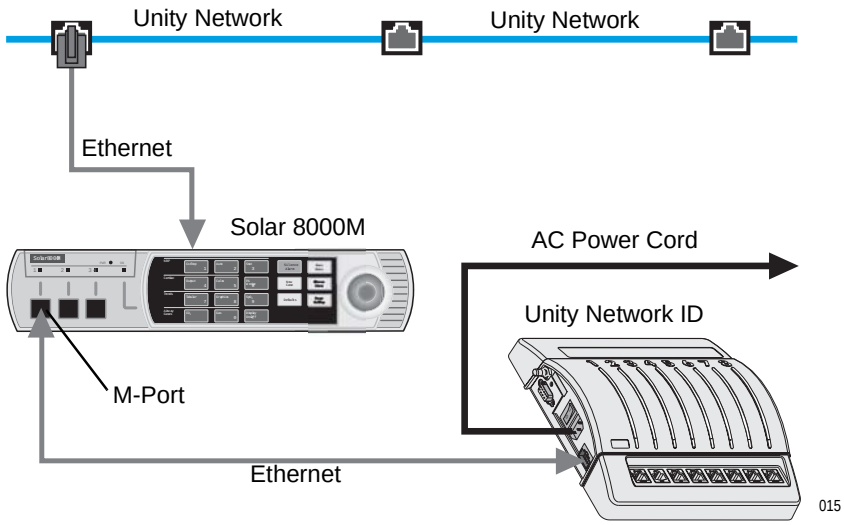
Connection to Solar 8000M/9500 Monitors

NOTE

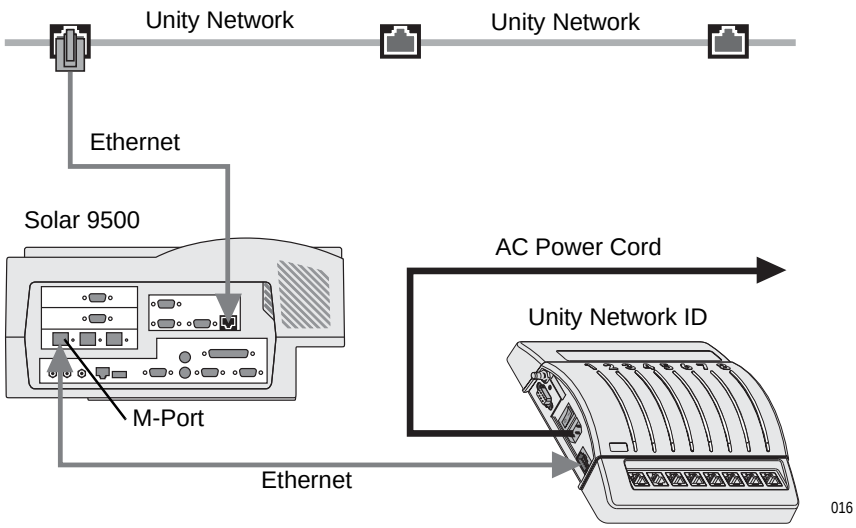
The Unity Network ID connectivity device CANNOT be interchanged between Dash and Solar monitors without first changing the Internet address in the connectivity device. See the site installation instructions in this chapter for further information.

Follow these instructions to connect the Unity Network ID connectivity device to the Solar monitor.

Solar 8000M Connection



Solar 9500 Connection



1. Connect the Ethernet network cable to the Ethernet connector at the back of the Solar monitor. Connect the other end of the network cable to the Unity Network Ethernet hub or wall plate.
2. Connect the Unity Network ID power cord to the power connector on the side of the connectivity device. Plug the power cord into an AC outlet, and turn the power switch to the on (**I**) position. Verify the switch is illuminated green.

3. Connect the Ethernet cable to any of the M-ports on the Solar monitor. Connect the other end of the cable to the **Ethernet** connector located on the side of the Unity Network ID connectivity device.
4. Make sure the power cord is securely connected to the monitor, and plug it into an AC power outlet. Turn power on to the monitor.
5. Connect the peripheral device(s) to the Unity Network ID connectivity device. Refer to Peripheral Device Connections in this chapter.

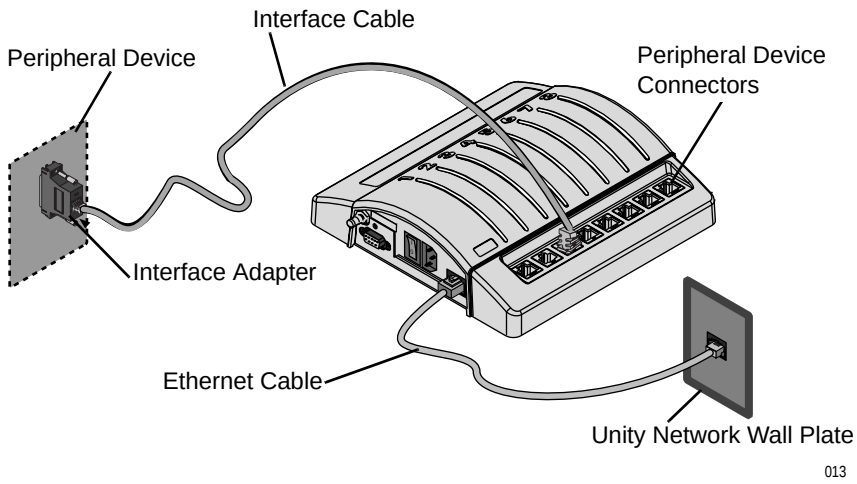
Peripheral Device Connections

Use this procedure to connect the supported peripheral device(s) to the Unity Network ID connectivity device.

CAUTION
Use of the wrong interface adapter may cause improper operation of the supported peripheral device. Verify the interface adapter on the peripheral device is the correct adapter and is operational before the device is used on a patient.

NOTE
Instructions for the interface adapter communication setup are packaged with each unique interface adapter. The setup instructions are specific to each supported peripheral device. Follow the correct instructions for your application.

1. Perform the specific communication setup procedures for each interface adapter.



2. Permanently connect the interface adapter to the connector on the supported peripheral device. Once installed, the interface adapter should always remain connected to the peripheral device.

WARNING

All eight peripheral device connectors of the Unity Network ID must only be used by ONE patient. More than one patient connected to the connectivity device may result in misassociation and loss of patient data.

3. Connect one end of the interface cable to the interface adapter. Connect the other end to one of the eight peripheral device connectors on the Unity Network ID connectivity device.
4. Complete the power connection for each peripheral device. Turn on power.

NOTE

It requires approximately five seconds for communication to be established with a peripheral device. With some equipment, it may take up to 30 seconds. It takes 30 seconds for communication to be re-established after cycling power to the Unity Network ID connectivity device.

5. Wait for communication to be established. Verify the status LED for each utilized peripheral device connector is illuminated constant green.

   The LED status displays are as follows. See the Troubleshooting chapter for further information.

Unity Network ID LED Color	Status
Green (constant)	System is working properly.
Amber (fast flashing)	Devices not compatible, or too many of the same devices connected.
Amber (slow flashing)	Communication error.
Amber (constant)	Please wait. Communication is pending.

6. Verify the collected data is properly displayed on the clinical information system, central station, and/or patient monitor.

Completion

Perform the following procedures before putting any unit into service.

1. To verify that the unit is working properly, perform the checkout procedure found in the Maintenance chapter of this manual.
2. Perform all safety tests according to the electrical safety tests found in the Maintenance chapter of this manual.

4 Maintenance

For your notes

Maintenance Schedule

Manufacturer Recommendations

WARNING
Failure on the part of all responsible individuals, hospitals or institutions, employing the use of this device, to implement the recommended maintenance schedule may cause equipment failure and possible health hazards. The manufacturer does not, in any manner, assume responsibility for performing the recommended maintenance schedule, unless an Equipment Maintenance Agreement exists. The sole responsibility rests with the individuals, hospitals, or institutions utilizing the device.

To ensure the Unity Network ID connectivity device remains in good operating condition, the manufacturer recommends qualified service personnel routinely perform the following maintenance schedule:

- **Visual Inspection:** Visual inspection upon receipt of the equipment, every 12 months thereafter, and prior to servicing the unit.
- **Cleaning:** Cleaning of the equipment upon receipt, every 12 months thereafter, and each time it is serviced.
- **Electrical Safety Tests:** Safety tests upon receipt of the equipment, every 12 months thereafter, and each time the unit is serviced.
- **Checkout Procedure:** Checkout procedure upon receipt of the equipment, every 12 months thereafter, and each time the unit is serviced.

Visual Inspection

The Unity Network ID connectivity device and its components should be carefully inspected prior to installation, once every 12 months thereafter, and each time the equipment is serviced.

- Carefully inspect the equipment for physical damage to the case. Do not use if damage is determined. Refer damaged equipment to qualified service personnel.
- Inspect all external connections for loose connectors or frayed cables. Have any damaged connectors or cables replaced by qualified service personnel.

Calibration

The Unity Network ID connectivity device does not require calibration.

Cleaning

Cleaning Precautions

WARNING–AVOID ELECTRIC SHOCK!
Disconnect the equipment from the power line before cleaning or disinfecting its surface.

To avoid damage to equipment surfaces, use a lint-free cloth or compressed air (aerosol form) for removing dust. Use one of the following approved solutions for cleaning:

- Cidex® solution,
- sodium hypochlorite bleach (diluted), or
- mild soap (diluted).

To avoid damage to the equipment surfaces, NEVER use the following cleaning agents:

- organic solvents,
- ammonia-based solutions,
- acetone solution,
- alcohol-based cleaning agents,
- Betadine® solution,
- a wax containing a cleaning substance, or
- abrasive cleaning agents.

Exterior Cleaning

Clean the exterior surfaces with a clean, lint-free cloth and one of the cleaning solutions listed above.

- Wring the excess solution from the cloth. Do not drip any liquid into open vents, switches, plugs, or connectors.
- Dry the surfaces with a clean cloth or paper towel.

Electrical Safety Tests

General

Electrical safety tests provide a method of determining if potential electrical health hazards to the patient or operator of the device exist.

Recommendations

WARNING
Failure to implement a satisfactory maintenance schedule may cause undue equipment failure and possible health hazards. Unless you have an Equipment Maintenance Agreement, GE Medical Systems *Information Technologies* does not in any manner assume the responsibility for performing the recommended maintenance procedures. The sole responsibility rests with the individual or institution using the equipment. GE Medical Systems *Information Technologies* service personnel may, at their discretion, follow the procedures provided in this manual as a guide during visits to the equipment site.

GE Medical Systems *Information Technologies* recommends that you perform all safety tests presented in this chapter:

- upon receipt of the device,
- every 12 months thereafter,
- each time the main enclosure is disassembled or a circuit board is removed, tested, repaired, or replaced, and
- record the date and results on the Maintenance/Repair Log included in this chapter.

Test Conditions

Electrical safety tests may be performed under normal ambient conditions of temperature, humidity, and pressure.

Test Equipment

The recommended test equipment to perform electrical safety tests is listed below.

Item	Specification
Leakage Current Tester	Equivalent to the circuits shown
Digital Multimeter (DMM)	AC volts, ohms
Ground Bond Tester	0 – 1 ohm

Power Outlet Test

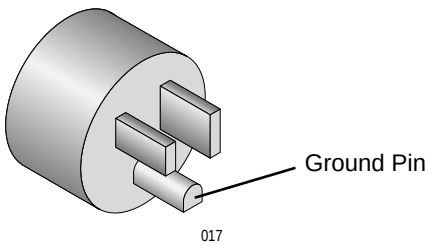
Before starting the tests, the power outlet from which the monitoring device will get electrical power must be checked. This test checks the condition of the power outlet to ensure correct results from leakage tests.

For international power outlets, refer to the internal standards agencies of that particular country. Use a digital multimeter to ensure that the power outlet is wired properly.

If other than normal polarity and ground is indicated, corrective action must be taken before proceeding. The results of the following tests will be meaningless unless a properly wired outlet is used.

Ground (Earth) Integrity

Listed below are two methods for checking the ground (earth) integrity, "Ground Continuity Test" and "Impedance of Protective Earth Connection." These tests determine whether the device's exposed metal and power inlet's earth (ground) connection has a power ground fault condition.



Follow the test method that is required by your country/local governing safety organization.

Ground Continuity Test

Compliance is checked with the following steps:

1. Disconnect the device under test from the power outlet.
2. Connect the negative (-) lead of the DMM to the protective earth terminal (ground pin in power inlet connector) or the protective earth pin in the main plug (ground pin in power cord). Refer to the US 120 Vac power plug in the figure on the previous page.
3. Set the DMM to the milliohm (mΩ) range.
4. Connect the positive (+) lead of the DMM to all exposed metal surfaces on the device under test. If the metal surfaces are anodized or painted, scrape off a small area in an inconspicuous place for the probe to make contact with the metal.
5. The resistance must read:
   - 0.1 ohm or less without power cord
   - 0.2 ohms or less with power cord

Impedance of Protective Earth Connection

This test, unlike a ground continuity test, will also stress the ground system by using special ground bond testers.

This test normally is only required as a manufacturing production test to receive safety agency compliance (e.g., IEC 60601-1). Some country agencies do require this test after field equipment repairs (e.g., Germany's DIN VDE 0751 standards). Consult your country/local safety agency if in question.

Compliance is checked with the following steps:

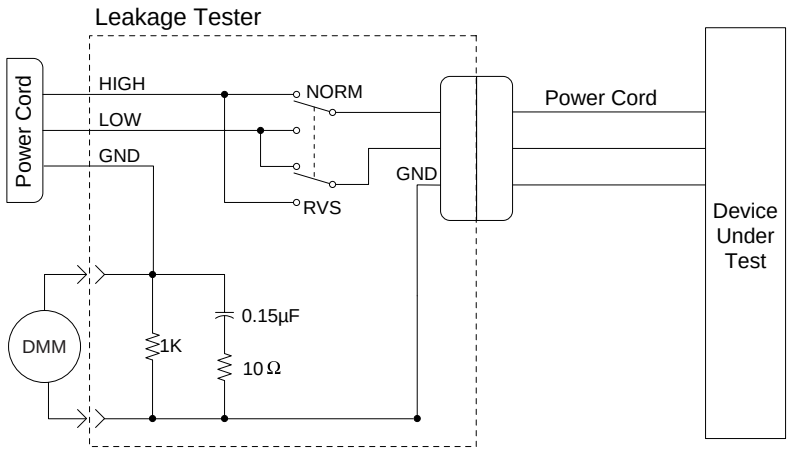
1. A current not less than 10A and not exceeding 25A from a current source with a frequency of 50 or 60 HZ with a no-load voltage not exceeding 6 V is passed for at least 5 seconds through the protective earth terminal or the protective earth pin in the mains plug and each accessible metal part which could become live in case of failure in basic insulation.
2. The voltage drop between the parts described is measured and the impedance is determined from the current and voltage drop. It shall not exceed the values indicated:
   - For equipment without a power supply cord, the impedance between the protective earth terminal and any accessible metal part with is protectively earthed shall not exceed 0.1 ohms.
   - For equipment with a power supply cord, the impedance between the protective earth pin in the mains plug and any accessible metal part which is protectively earthed shall not exceed 0.2 ohms.

   When taking this measurement, move the unit's power cord around. There should be no fluctuations in resistance.

Ground (Earth) Wire Leakage Current Tests

Perform this test to measure current leakage through the ground (earth) wire of the equipment during normal operation.

1. Configure the leakage tester like the circuit shown below.



DMM set to measure AC voltage

018

NOTE

The DMM plus leakage tester network shown is the circuitry defined by the UL 544 standard for measuring leakage current.

The measuring devices defined by various standard organizations (IEC, UL, etc.) produce almost identical test measurement results.

2. Connect the power cord of the device under test to the power receptacle on the leakage tester.

   NOTE

   The device under test is to be tested at its normal operating voltage.

3. Set the power switch of the device under test to ON.
4. Read the current leakage indicated on the DMM.
5. Set the polarity switch on the leakage tester to RVS (reverse).

6. Read the current leakage indicated on the DMM.

NOTE

If either reading is greater than the appropriate specification below, the device under test fails. Contact GE Medical Systems *Information Technologies* Technical Support.

Power Conditions of Device Under Test	Specification
100-120 V/50-60 Hz	300 microamperes (0.3 volts on the DMM)
Center-tapped, 200-240 V/50-60 Hz, single phase circuit	300 microamperes (0.3 volts on the DMM)
Non-center-tapped, 200-240 V/50-60 Hz, single phase circuit	500 microamperes (0.5 volts on the DMM)

NOTE

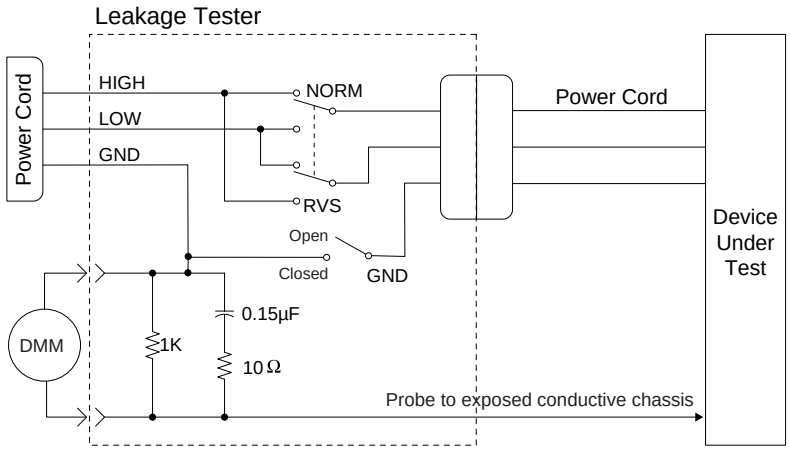
Center-tapped and non-center-tapped supply circuits produce different leakage currents and the UL and IEC limits are different.

7. Set the power switch of the device under test to OFF.

Enclosure Leakage Current Test

Perform this test to measure current leakage through exposed conductive surfaces on the device under test during normal operation.

1. Configure the leakage tester like the circuit shown below with the GND switch OPEN and the polarity switch NORM.



DMM set to measure AC voltage

019

2. Connect the probe to an unpainted, non-anodized chassis ground on the device under test.

3. Set the power switch of the device to ON.

4. Read the current leakage indicated on the DMM.
5. Set the polarity switch to RVS (reverse).
6. Read the current leakage indicated on the DMM.

NOTE

If either reading is greater than the appropriate specification below, the device under test fails. Contact GE Medical Systems *Information Technologies* Technical Support.

Power Conditions of Device Under Test	Specification
100-120 V/50-60 Hz	300 microamperes (0.3 volts on the DMM)
Center-tapped, 200-240 V/50-60 Hz, single phase circuit	300 microamperes (0.3 volts on the DMM)
Non-center-tapped, 200-240 V/50-60 Hz, single phase circuit	500 microamperes (0.5 volts on the DMM)

7. Set the GND switch on the leakage tester to CLOSED.
8. Read the current leakage indicated on the DMM.
9. Set the polarity switch to RVS.
10. Read the current leakage indicated on the DMM.

NOTE

If the reading is greater than 100 microamperes (0.1 volts on the DMM), and the device under test is powered from 100-240 V/50-60 Hz, the device under test fails. Contact GE Medical Systems *Information Technologies* Technical Support.

11. Set the power switch of the device under test to OFF.

Test Completion

1. Disconnect the leakage tester from the power outlet.
2. Disconnect all test equipment from the device.
3. Disconnect the device power cord from the leakage tester.

Checkout Procedure

NOTE

The Unity Network ID connectivity device does not require calibration.

Test Frequency

This procedure tests the functionality of the unit. GE Medical Systems *Information Technologies* recommends that this checkout procedure be performed:

- upon receipt of the unit,
- once every 12 months thereafter, and
- each time the unit is opened or repaired.

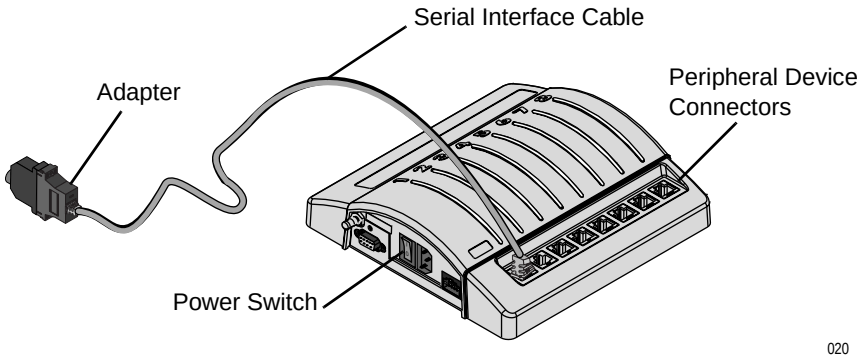
Special Equipment

The equipment listed below is necessary to perform the checkout procedure. Equivalent equipment may be substituted.

- Port-checkout adapter, pn 420915-031
- Serial interface cable, category 5 (cat 5), pn 418335-002

Peripheral Device Connectors

Follow these steps to ensure that all eight peripheral device connectors are functional.



1. With the power cord connected, turn the power switch to the on ("**I**") position. Verify that the switch is illuminated green.
2. Connect the Port Checkout side of the adapter to one end of the serial interface cable.
3. Connect the other end of the serial interface cable to one of the eight peripheral device connectors.
4. Ensure the appropriate status LED is illuminated steady green for the utilized peripheral device connector. If the LED flashes amber, refer to the Troubleshooting chapter in this manual.

NOTE

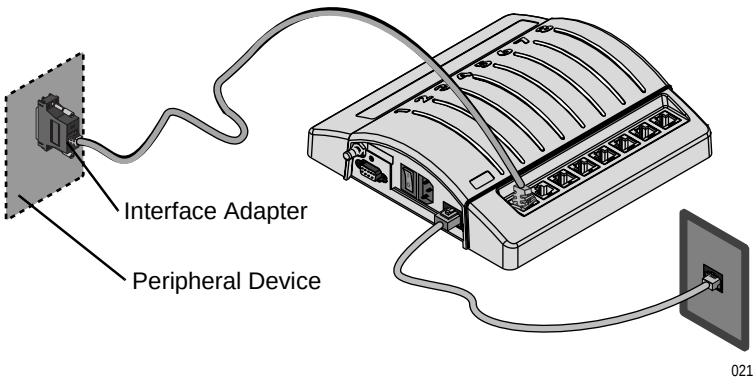
The status LED will stay illuminated for a short period of time after the port-checkout adapter is removed.

5. Repeat steps 3 and 4 for all eight peripheral device connectors.

Identification

CAUTION

Use of the wrong interface adapter may cause improper operation of the supported peripheral device. Verify the correct interface adapter on the peripheral device is operational before the device is used on a patient.



1. Disconnect the port-checkout adapter and replace it with the correct interface adapter for the supported peripheral device to be used.
2. Connect the Unity Network ID connectivity device to the peripheral device. Refer to the Installation chapter in this manual for more details.
3. Ensure that the LED for the utilized peripheral device connector is illuminated steady green.
4. Ensure that the unique ID number of the unit is linked to the correct patient at the clinical information system. If not, refer to the Troubleshooting chapter in this manual.

Completion

Perform all safety tests according to the Electrical Safety Tests presented in this chapter.

Return the unit to use.

PM Form

Due to continuing product innovation and because specifications in this manual are subject to change without notice, a PM form is not included with this manual. For the latest PM form regarding this product, contact GE Medical Systems *Information Technologies* Service.

If repairs/adjustments were made or any parts replaced, describe this in the area provided on the PM form.

Also include comments regarding any unusual environmental conditions that may affect the operation or reliability of the equipment in the area provided on the PM form.

On the following pages, a repair log is included for your convenience to record the repair history of this product.

Repair Log

Unit Serial Number:
Institution Name:

Date	Maintenance/Repair	Technician

5 Troubleshooting

For your notes

General Fault Isolation

Initial Considerations

If your unit is not working properly, begin troubleshooting by considering the following:

- Are all communication cables firmly connected?
- Is the power cord connected?
- Is the power switch LED illuminated?
- Were there any changes in the use, location, or environment of the equipment that could have caused the failure (i.e., unit is switched between monitors operating on different IP addresses without changing the IP address setting)?
- Has the Unity Network ID connectivity device or any peripheral device been modified in any way, either in software or hardware?
- Is operator error the cause of the problem? Try to repeat the user's scenario and compare it to proper operation of the equipment.

PC Communication Problems

If you encounter problems with communication between the Unity Network ID connectivity device and the computer during configuration or other service operations, try the following:

- If wrong configuration data was entered, exit the menu. Re-enter the menu and type over the old data.
- If communication is interrupted, power cycle the unit. Type **service** and press the **Enter** key at the computer.

Software Compatibility

If the peripheral device has been upgraded with new software, the interface adapter may not communicate.

NOTE

Please fax or mail the Notification of Equipment Upgrade form found in this chapter to report the new software level of the peripheral device.

If you have purchased additional interface adapters and they are not communicating with your Unity Network ID connectivity device, contact your GE Medical Systems *Information Technologies* representative for assistance.

Serviceability

Few components of the Unity Network ID are technician serviceable. See the Technical Replacement Units chapter in this manual for service related information. Interface adapters are not technician serviceable, and should be returned to the factory if internal problems are detected.

Notification of Equipment Upgrade

Software Compatibility

If you are going to upgrade another manufacturer's equipment which already interfaces with a Unity Network ID connectivity device, please photocopy this page, fill out all the information and FAX it to:

GE Medical Systems *Information Technologies*
Milwaukee, Wisconsin U.S.A.
Attn: Customer Satisfaction
Quality Assurance Department
414-362-2585

We will call the contact person designated below to get the necessary information to determine whether your GE Medical Systems *Information Technologies* equipment will still be compatible with the upgraded equipment.

_____
Contact Person (Please PRINT Name) at Your Hospital/Institution

_____
Phone Number of Contact Person (Include Area Code and Extension)

_____
Hours When Contact Person Can Be Reached

_____
Name of Hospital/Institution

_____

_____
Address of Hospital/Institution (Include Country)

_____
Peripheral Equipment Manufacturer and Model Name

For GE Medical Systems *Information Technologies* Use:

Forwarded to Clinical Systems Marketing on _____.

Visual Inspection

A thorough visual inspection of the equipment can save time. Small things — disconnected cables, foreign debris, missing hardware, loose components — can often cause symptoms and equipment failures that may appear to be unrelated and are difficult to track.

Take the time to make all the recommended visual checks in the chart below before starting any detailed troubleshooting procedures.

Visual Inspection List	
Area	**Look for these problems:**
I/O connectors and cables	■ Fraying or other damage ■ Bent prongs or pins ■ Cracked housing ■ Foreign matter
Interface cables	■ Excessive tension or wear ■ Loose connections ■ Strain reliefs out of place
Ground wires/wiring	■ Loose wires ■ Faulty wiring ■ Wires pinched or in vulnerable position
Mounting hardware	■ Loose or missing screws or other hardware
Power source	■ Power source problems may cause static discharge, resetting problems, and noise.

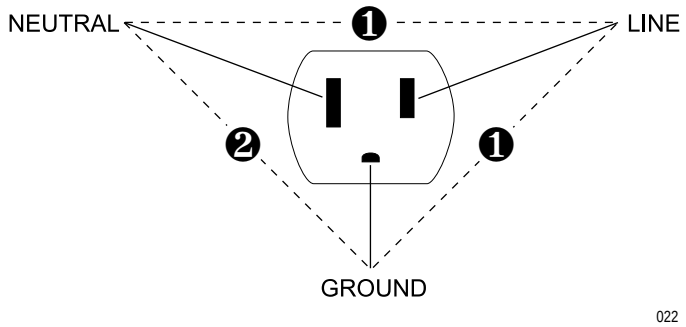
AC Line Voltage Test

This test verifies that the domestic wall outlet supplying power to the equipment is properly wired. For international wiring tests, refer to the internal standards agencies of that particular country.

120 VAC, 50/60 Hz

Use a digital voltmeter to check the voltages of the 120-volt AC wall outlet (dedicated circuitry recommended). If the measurements are significantly out of range, have a qualified electrician repair the outlet. The voltage measurements should be as follows:

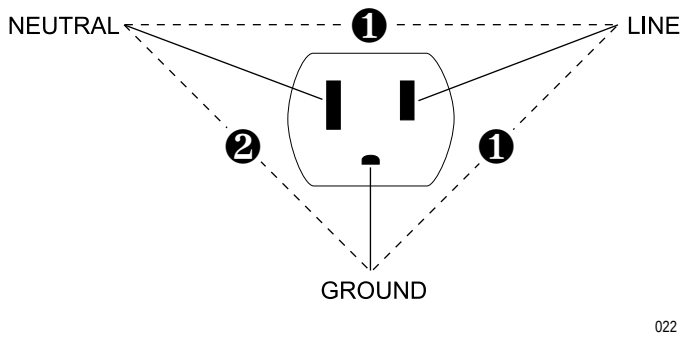
1. 120 VAC (± 10 VAC) between the line contact and neutral and between the line contact and ground.
2. Less than 3 VAC between neutral and ground.



240 VAC, 50/60 Hz

Use a digital voltmeter, set to measure at least 300 VAC, to check the voltages of the NEMA 6-20R, AC wall outlet (dedicated circuitry recommended). If the measurements are significantly out of range, have a qualified electrician repair the outlet. The voltage measurements should be as follows:

1. 120 VAC (± 10 VAC) between either “hot” contact and ground.
2. 210 to 230 VAC between the two “hot” contacts.



Problems and Solutions

The table below lists common problems and their solutions. You can use this troubleshooting process to solve many problems instead of sending the unit in for service. If problems persist, contact GE Medical Systems *Information Technologies* Service.

Problem	Possible Cause/Solution
The power switch is not illuminated green.	The unit has no power: ■ Verify power switch is in the on (**I**) position. ■ Verify power cord is connected to an AC wall receptacle. ■ Verify power exists at the AC wall receptacle.
A status LED is not illuminated green.	If the status LED is illuminated steady yellow, and the cable is connected to the peripheral device connector and to the interface adapter, then communication has not yet started: ■ The yellow status LED should change to green within one minute. If the status LED is blinking slowly (once every two seconds), the peripheral device is connected but there is no communication: ■ Verify the interface adapter is the correct adapter for the device to which it is connected. ■ Verify the peripheral device is turned on. ■ Verify the peripheral device is in its operational state. ■ Verify the peripheral device settings have been set by the biomedical department as explained on the separate instruction sheet provided with the interface adapter. ■ If the software in the peripheral device has been updated, fax the Notification of Equipment Upgrade form in this chapter to GE Medical Systems *Information Technologies*. If the LED is blinking fast (twice every second), try one or more of the following solutions: ■ Verify whether there are too many devices of the same type connected, and disconnect one of the duplicate devices. ■ Verify the interface adapter is the correct adapter for the device to which it is connected. ■ Replace the interface adapter. ■ This specific model of the peripheral device may not be supported. Contact GE Medical Systems *Information Technologies* service to see if a different software version or interface adapter is available.

Problem	Possible Cause/Solution
Patient data is not displayed at the clinical information system.	■ If the Unity Network ID connectivity device is used in peripheral mode with a Dash or Solar monitor, it is normal for the collected data not to be displayed at the clinical information system. The data is viewable only at the monitor. ■ Check for a loose or faulty cable between the Unity Network ID Ethernet port and the monitoring network wall plate. ■ Refer to the clinical information system documentation for viewing instructions. ■ Ensure the Unity Network ID number listed at the clinical information system matches the device ID number on the Unity Network ID connectivity device. ■ Verify the Unity Network ID connectivity device is programmed with the same Internet address as the monitoring network. ■ To verify the Unity Network ID connectivity device is communicating on the network, follow this procedure. See the Technical Information chapter for complete details. 1. Connect a PC to the RS 232 port on the unit. 2. Run the HyperTerminal application. 3. Type **service** at the PC. 4. Write down the care unit name and the bed number of the unit displayed on the PC. 5. Select the RWHAT database. If other devices are listed in the database, this unit is properly receiving information from the network. 6. Disconnect the PC from the unit. 7. Go to another Unity Network ID connectivity device on the same network and connect the PC. 8. Run the HyperTerminal application. 9. Type **service** at the PC. 10. Select the RWHAT database. 11. Select *Search for String*. 12. Type in the bed number. If you see a response listed with the bed name, the unit under test is properly sending information to the network. ■ Swap the Unity Network ID connectivity device with a known good unit. The replacement unit must be configured and then programmed for the installation site. (See the Installation chapter for instructions.)
Patient data is not displayed at the Dash Pro 3000/4000 patient monitor.	■ Verify the monitor has power turned on. ■ Check for a loose or faulty interconnect cable between the Unity Network ID peripheral device connector and the Dash monitor or Dash docking station **AUX** port. ■ Ensure that BOTH the Unity Network ID connectivity device and the Dash monitor/ docking station are connected to the network via Ethernet cables. ■ Verify auto-association between the two units by observing that the LED above the peripheral device connector on the Unity Network ID is illuminated green. ■ Verify the Dash monitor software version is 3A or later. ■ Verify the Unity Network ID connectivity device and monitor are programmed with the same Internet address as the monitoring network.
Patient data is not displayed at the Solar 8000M/9500 monitor.	■ Verify the Solar monitor has power turned on. ■ Check for a loose or faulty Ethernet cable connection between the Solar monitor M-port and the Unity Network ID **Ethernet** connector. ■ Check the revision display on the Solar monitor. If the revision of the Unity Network ID is listed, but no entries for the connected peripheral devices appear, check for loose or faulty connections between the Unity Network ID and the peripheral devices. ■ Check the revision display on the Solar monitor. If the revision of the Unity Network ID is NOT listed, the Internet address and netmask of the Solar monitor M-port may not be set properly, and/or the Internet address of the Unity Network ID may not be set properly. ■ Verify the Solar 8000M monitor software version is 4A or later, Solar 9500 version is 3A or later.

Status LED Displays

System Status

The status LEDs will indicate system operations when programming the Unity Network ID or when a duplicate network location address is encountered.

Green	Amber	Function	Description
All LEDs flash green twice and then flash amber once.		Initialization	This is the normal startup for the main code and boot flash test.
	Blinks sequentially from right to left.	Boot code	The boot code is running.
	Blinks sequentially from left to right.	Downloading	The Unity Network ID connectivity device is being downloaded, either automatically or manually. The progress is indicated by how many LEDs on the right remain on.
	Blinks alternating ports 1-2, then ports 3-8.	Duplicate location on network	One or more other devices on the network are using the same unit name and bed number as the connectivity device. The combination of unit name and bed number must be unique on the same network.
	Blinks alternating ports 1, 3, 5, and 7, then ports 2, 4, 6, and 8.	Software download not complete	While downloading new software to the Unity Network ID connectivity device, communication was interrupted.

Peripheral Device Connection Status

The status LEDs will indicate proper communication for each utilized peripheral device connector or problems with the connection(s).

Green	Amber	Function	Description
LED is ON.		Working.	Communication with the peripheral device is good.
LED is OFF.	LED is OFF.	No connection.	Nothing is connected to the associated peripheral device connector, the interface adapter is not operational, or the Unity Network ID connectivity device is powered off.
	LED is ON.	Communication is pending.	The cable and interface adapter are connected, but the peripheral device communication is not yet established. It requires approximately five seconds for communication to be established with a peripheral device. With some equipment, it may take up to 30 seconds. It takes 30 seconds for communication to be re-established after cycling power to the Unity Network ID connectivity device.
	Slow blinking (once every 2 seconds).	Communication error.	The Unity Network ID connectivity device and the peripheral device are connected, but there is a communication error with the supported device; or the peripheral device software is not compatible with the Unity Network ID software.
	Fast blinking (twice every second).	Other errors.	Indicates one or more of the following: ■ Too many devices of one type are connected. ■ The interface adapter is malfunctioning. ■ The peripheral device software is not compatible with the Unity Network ID software. ■ The interface adapter is not supported by the Unity Network ID software.

6 Technical Replacement Units

For your notes

Ordering Parts

The parts list and assembly drawing in this chapter supply enough detail to order parts for the assemblies considered technical replacement units. If you require additional information, schematics, or troubleshooting assistance, contact Tech Support.

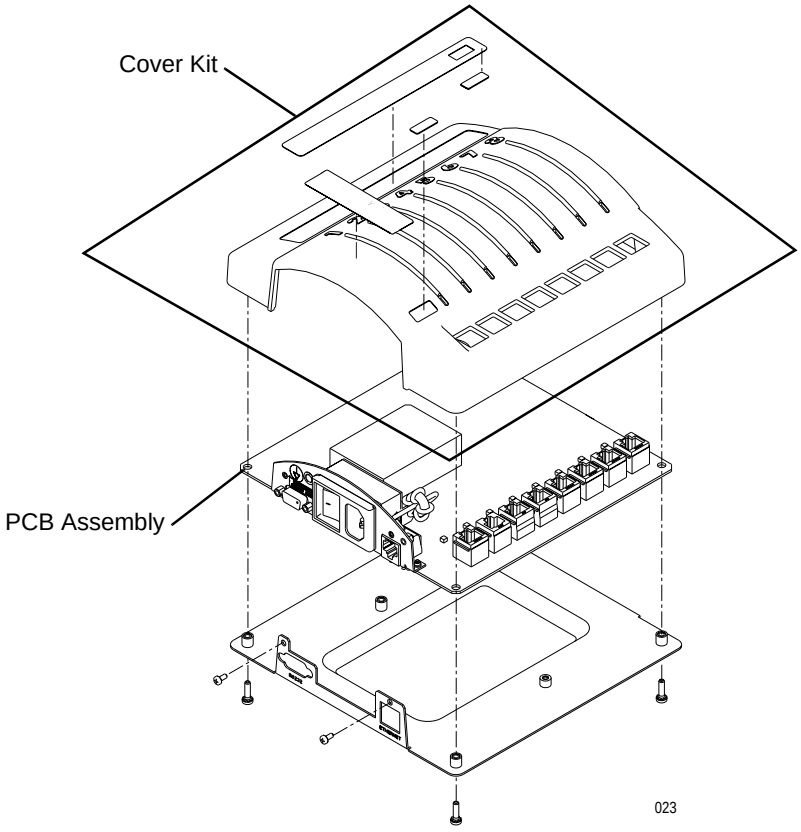
To order parts, contact Service Parts at the address or telephone number listed on the "How to Reach Us...," page found in the front of this manual.

Technical Replacement Units

The table below lists the technical replacement components. See the operator's manual for a complete list of accessories and expendable supplies.

NOTE

This product contains no field replaceable fuses.



Technical Replacement Units	
Item	**Part Number**
Plastic Cover Kit	2014466-002
PCB Assembly (does not include metal base plate)	2014466-003

Part Replacement Procedures

WARNING—BEFORE SERVICING THE UNIT:
Make sure the unit is not in use. Monitoring will be interrupted when the unit is disconnected.

Turn the power switch off and disconnect the AC power cord from the unit. Always use insulated tools when servicing the unit.

CAUTION
This assembly is extremely static sensitive and should be handled using electrostatic discharge precautions.

CAUTION
Solder multi-layer and surface mount PCB assemblies at your own risk! Improper repair methods can damage PCBs even further. Only qualified service personnel with the proper laboratory equipment should attempt to repair PCBs.

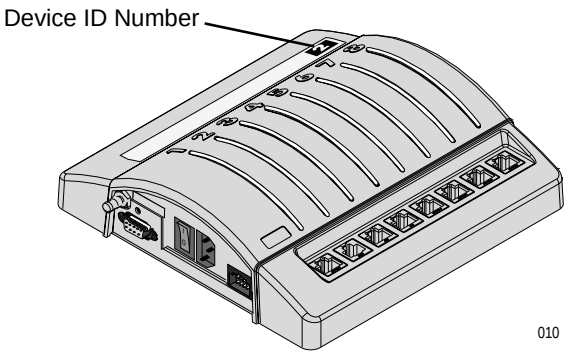
Cover Replacement

Install Labels

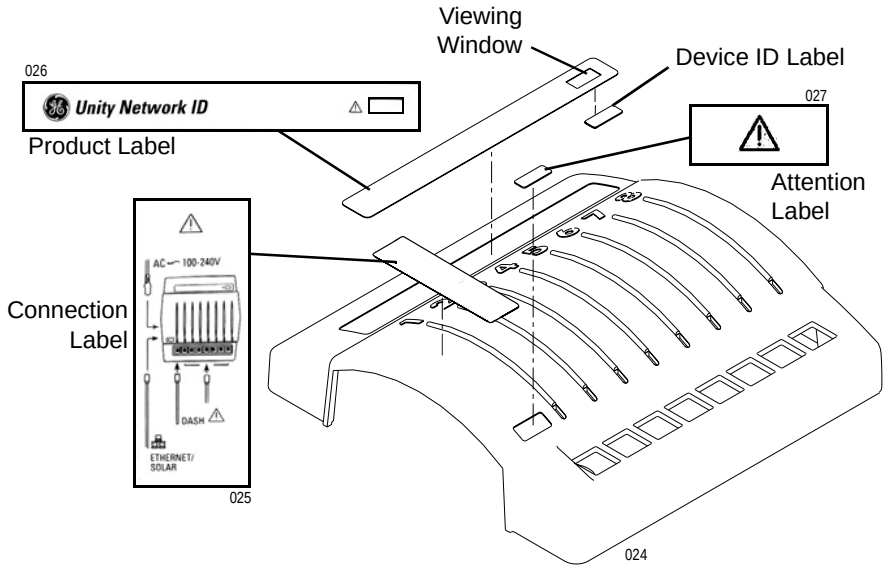
1. Remove the new plastic cover and all labels from the shipping carton.

   NOTE
   If the device ID number cannot be identified from the original cover, locate the serial number on the bottom of the metal base plate. The last four digits (not letters) appearing in the serial number code are the device ID number. Do not transcribe preceding zeroes (i.e., 0002) to the device ID label.

2. Identify the device ID number located on the original cover.



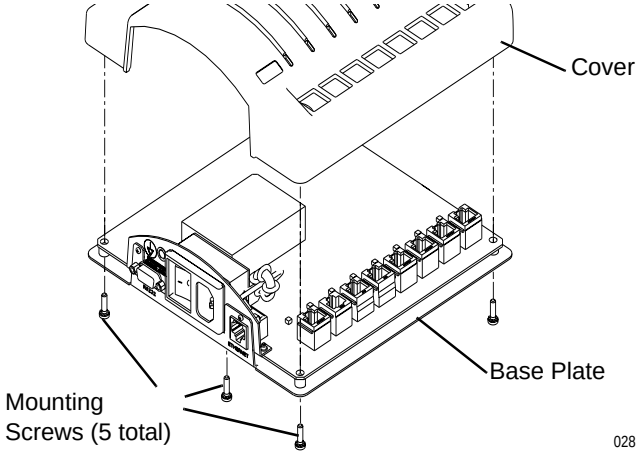
3. Clearly write the device ID number on the blank Device ID label provided in the kit. Use a black, permanent ink pen.
4. Remove the backing from the Device ID label and Product label.
5. Affix the Device ID label to the bottom side of the Product label so the number appears in the viewing window.



6. Affix the Product label (with Device ID label) to its proper location on the cover.
7. Affix the Connection label and Attention label to the proper locations on the cover.
8. Discard the remaining labels in the kit.

Remove/Install Cover

1. Turn power switch to the off (**O**) position on the connectivity device to be repaired.
2. Disconnect the AC power cord from the wall outlet and from the power connector on the connectivity device.
3. Disconnect all other cables from the connectivity device.
4. Remove the five mounting screws securing the metal base plate to the plastic cover.



5. Lift the cover from the base plate.
6. Position the new cover onto the base plate.
7. Secure the cover with the mounting screws.

PCB Replacement

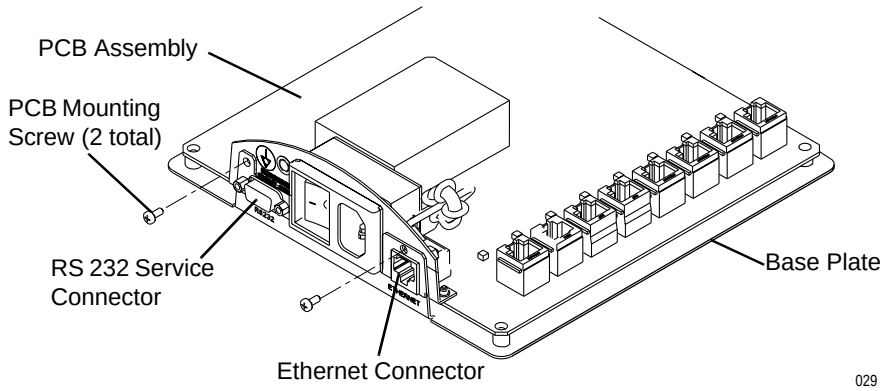
WARNING
Replacement of the PCB assembly requires programming the new PCB with the device ID number assigned to the original cover and metal base plate.

Failure to change the factory programmed device ID number in the replacement PCB will result in misassociation of patient data on the monitoring network.

Remove/Install PCB

1. Turn power switch to the off (**O**) position on the connectivity device to be repaired.
2. Disconnect the AC power cord from the wall outlet and from the power connector on the connectivity device.
3. Disconnect all other cables from the connectivity device.
4. Remove and retain the plastic cover and mounting screws from the unit. See Remove/Install Cover in this chapter.

5. Remove and retain two screws securing PCB assembly to metal base plate. Lift PCB from base plate.



6. Assemble the new PCB carefully to the base plate, ensuring the RS 232 service connector and Ethernet connector are seated properly in mounting flange on the base plate.
7. Install the original PCB mounting screws.
8. Install the cover.
9. Download the software (provided on CD) to the PCB assembly using the software installation instructions provided in the kit.
10. Program the new PCB with the original device ID number on the cover of the unit.

Program the Device ID Number

1. Complete the RS 232 cable and power connections for your computer and the Unity Network ID connectivity device to run the HyperTerminal application. See the Technical Information chapter in this manual if necessary.
2. Run the HyperTerminal application.
3. Hold down the **B** key while cycling power to the Unity Network ID connectivity device to access the *BOOT SERVICE MENU*.

NOTE

To select individual options from a menu or submenu list, type the number that appears in front of the option, then press the **Enter** key. If you wish to accept a menu default value, press the **Enter** key without changing the value.

4. Select the *Change Device ID* option.
5. Type the ID number password provided with the new PCB. Press **Enter**.
6. Type the number appearing on the device ID label located on the cover of the connectivity device. Press **Enter**.
7. Verify the correct device ID number now appears in parentheses next to the *Change Device ID* option on screen.

Configure the New PCB

NOTE

The new PCB must be configured with the correct settings before being returned to service.

Perform the Configuration procedure for the new PCB as described in the Installation chapter.

Completion

Perform the checkout procedure and electrical safety tests found in the Maintenance chapter before returning the unit to service.

Shipping Instructions

Damage or defects to non-serviceable components requires return of the equipment to a factory authorized service agent. Contact Tech Support for the correct shipping location.

Package the equipment in its original shipping carton if available, or package the unit by surrounding it with adequate packing material to prevent movement during transport. Mark the carton FRAGILE and return it to the address provided by Tech Support.

For your notes

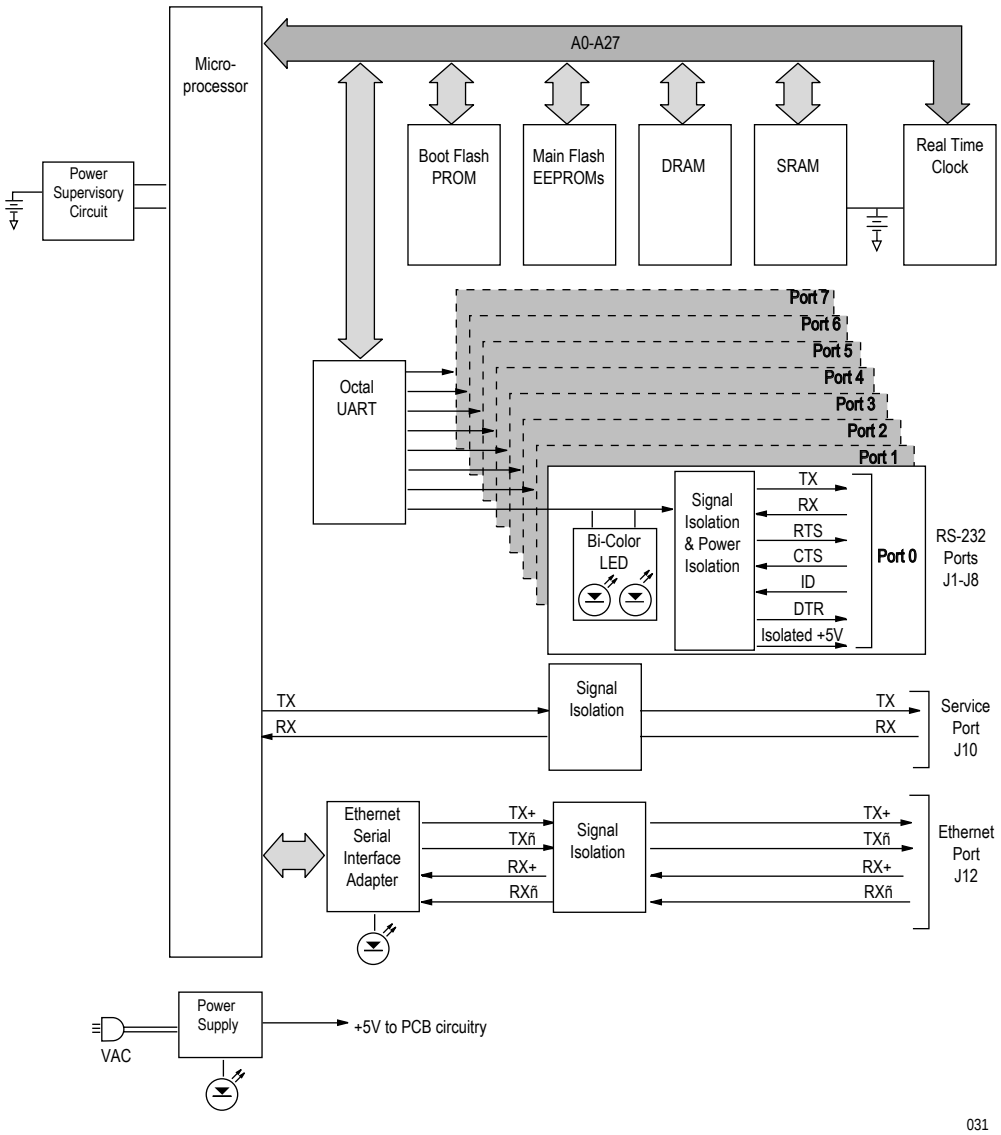
7 Technical Information

For your notes

Theory of Operation

The Unity Network ID connectivity device acquires digital data from eight individually isolated peripheral device connectors. The data may be collected from up to eight supported peripheral devices not necessarily manufactured by GE Medical Systems *Information Technologies*. The Unity Network ID connectivity device processes this data and transmits the formatted data via the monitoring network.

The peripheral device connectors are located on the processor PCB. The processor PCB provides the microprocessor with its associated memory and peripherals, an Ethernet interface, dedicated RS 232 interface for service support and a PCB-mounted power supply and power entry module. Refer to the overall block diagram.



Microprocessor

The microprocessor receives the device data from the octal UART, processes this data to extract parametric and waveform data, does trending, formats the data for sending, and outputs the data to the monitoring network.

Memory

Memory resources for code storage and execution, nonvolatile data and configuration storage are provided by the following:

- Boot code memory
- Main code memory
- Volatile RAM memory
- Nonvolatile memory

Boot Code Memory

A 128k x 8bit, uniformly sectored boot flash PROM is used to store the boot code. It can be updated by reprogramming it with new code from a download server on the network. The FLASH PROM provides storage for the Ethernet and IP addresses and some configuration data.

Main Code Memory

The main code for the microprocessor is stored in two 16M-bit flash EPROMs configured as 32-bits wide providing a total of 4M bytes for code storage. The speed will allow for no-wait state code execution. The code is updatable by reprogramming with new code from a download server on the network.

Volatile RAM Memory

The main 'scratch pad' memory is 4M-bytes of DRAM memory provided by two 16M-bit DRAMs configured as 32 bits wide. The refresh of this memory is provided by the DRAM controller internal to the microprocessor. The address multiplexing is accomplished with the microprocessor's internal multiplexer.

Nonvolatile Memory

The SRAM is lithium battery backed, 16-bits wide, and used for non-volatile memory storage. The non-volatile memory stores the setup, trended and configuration data. This type of data is required to be retained even in the absence of power being applied. The nonvolatile memory, comprised of battery backed up RAM, will retain data for at least five years after the date of manufacture of the circuit board.

Peripherals

The processor PCB supports the following peripherals:

Realtime Clock

The realtime clock (RTC) provides a means of time stamping trends and for time tagging any events that require it. The RTC is battery backed and protected from corruption during power transitions up or down. The RTC uses an internal quartz crystal oscillator.

UARTs

The eight peripheral device connectors are interfaced with an octal UART, and the RS 232 service connector is interfaced with one of the integrated UARTs of the microprocessor. The UARTs are capable of operating at 22 standard baud rates in the 50-115.2k range, specifically: 50, 75, 150, 200, 300, 450, 600, 900, 1200, 1800, 2400, 3600, 4800, 7200, 9600, 14.4k, 19.2k, 28.8k, 38.4k, 57.6k, and 115.2k bps; at 5, 6, 7 or 8 data bits; 1, 1.5, or 2 stop bits; with even, odd or no parity. The service connector UART is capable of operating at 9600 bps, 8 data bits, 1 stop bit, no parity, and no flow control.

In addition to the above capability, the octal UART has sixteen byte FIFOs on both the receiver and transmitter and I/O port pins that function as RTS/CTS modem control bits. The benefit of the FIFO is to reduce the overhead to the microprocessor when servicing the UARTs. The octal UART interrupt is a level six autovector.

Ethernet Serial Interface Adapter

The microprocessor has an integrated Ethernet controller that uses a companion, communication chip, designated as the Ethernet serial interface adapter. It provides the serial interface, clock generation/ recovery functions, and other network related support.

Power-On Reset/Watchdog

The power-on reset and watchdog function are provided externally to the microprocessor supervisory circuit. The microprocessor supervisory circuit has a 4.65V threshold for generating a power on/off reset, a 1.6 second watchdog time out, and power fail comparator accuracy within a 2% tolerance.

Communication Interface

Communication with the Unity Network ID connectivity device is accomplished primarily between external vendor devices and the monitoring network. Communication packets are formatted for standard Ethernet network protocol by the microprocessor. This protocol is based on the industry standard of UDP/IP protocol of the IEEE 802.3 standard. The OSI model layers implemented are as follows:

- Application — Parameter data structure
- Presentation — BEDMSG structure
- Session — UDP
- Transport — IP
- Network — IEEE 802.3 packet structure
- Data link — IEEE 802.3 transceiver
- Physical — IEEE 802.3 bus

Serial Communication Interface

The UART based serial communication is between the eight external devices and the Unity Network ID connectivity device using eight device-specific interface adapters.

Peripheral Device Connectors

The peripheral device connectors are designed to provide reliable operation with cable lengths of up to 50 feet of category 5 cable. All external vendor devices communicate with the Unity Network ID connectivity device through the octal UART and RS 232 interface. This interface is isolated from the earth referenced circuitry as well as each other RS 232 port. The vendor device interface consists of the standard RS 232 signals of Transmit (TX), Receive (RX), Ready to Send (RTS), Clear to Send (CTS) and Data Terminal Ready (DTR) as well as a unique device identification scheme (SERIAL_ID) which uses a “one wire interface” chip.

The signal lines are isolated using optocouplers which are rated for one minute at 2500V rms isolation voltage. The SERIAL_ID line is bidirectional requiring two more optocouplers to provide isolation and speed to lessen the burden on the microprocessor.

Each port has an associated bi-color LED. When the LED is green, it indicates that the communication channel is operating acceptably. When the LED is amber flashing or steady, a problem is indicated such as inconsistent or bad device ID received, or that communication is missing or not acceptable. Isolated +5 voltage is provided for each peripheral device connector in case future interface adapters require power.

Isolated DC/DC Converters

Isolated power for the eight interfacing ports and service port is accomplished using a DC/DC converter. For each port, a transformer driver/chopper IC chops the +5V source and symmetrically drives each end of the center tapped transformer primary (i.e., T2). The center tapped secondary allows for full wave rectification using two rectifier diodes. The rectified, filtered raw DC is regulated by a voltage regulator. The transformer for each port is specifically designed for this application. It has an isolation voltage of 2000V RMS for one minute, a 3:4 turns ratio to step up the voltage enough to compensate for the voltage drop of the rectifier.

RS 232 Service Connector

The processor PCB provides a dedicated RS 232 connector as a service port. This connector is a standard nine pin female D-type connector and accommodates the standard PC pin out for RS 232 serial communication with a personal computer or terminal. The service connector is used to configure the Unity Network ID connectivity device with its IP address, unit name/bed number, device ID number, to download new code, to set the time and date, and to provide a connection for a polled parameter service.

Ethernet Communication

The processor PCB provides connectivity to the monitoring network through an RJ-45 twisted-pair (TP) connector J12. The networking facility is provided by the Ethernet serial interface adapter and the microprocessor. Loopback and link-test disable features, which are unique to the twisted-pair interface, are under software control. The Ethernet serial interface adapter provides four LED drivers for indicating transmit (DS11), receive (DS12), collision (D13), and link OK (DS14).

The twisted -pair interface is accomplished with two differential pairs, LAN_TRANSMIT and LAN_RECEIVE, that are filtered, isolated, ESD protected and communicate through the standard 8-pin RJ-45 connector.

Power Supply Conversion

Power Entry Module

The AC line power entry module is PCB mounted and consists of an IEC-320 receptacle and a green, illuminated on/off switch. A green power switch indicates that power is applied to the processor PCB. This light is directly off the AC line and not under microprocessor control.

Fuses

Each side of the AC line is fused by two 2.0 amp fuses internal to the power supply. They are not field serviceable.

Main +5V Supply

The power supply is a PCB-mounted, off-line, switching supply providing +5V at 2A for a total output power of 10W. AC line voltage is supplied to the processor PCB through a power connector from the power entry module.

ESD Protection

ESD protection for each of the eight RJ-45 connectors consists of a typical dual diode/dual transorb arrangement, with the transorbs referenced to the isolated return plane. Earth ground is referenced by using a 100M resistor between the Earth Ground and the isolated return plane. 'Planar capacitance' with series impedance is used to drop the amplitude and decrease the edge rate of the ESD pulses. This 'planar capacitance' is implemented by placing the +5V_RETURN plane, which is earth referenced, in an adjacent inner layer in the PCB directly below the isolated return plane.

Input and Output Connectors

The following tables provide pin-by-pin descriptions and signal names for the external connectors.

Ports 1 – 8

These eight twisted pair RJ-45 connectors connect the Unity Network ID connectivity device to eight peripheral devices.

Pin #	Signal Name	Type	Description
1	PORTx_+5V_ISO	Output	Isolated +5V power
2	PORTx_232_CTS	Input	RS 232 clear-to-send signal
3	PORTx_232_RX	Input	RS 232 receive signal
4	PORTx_+5V_RETURN		RS 232 signal common
5	PORTx_SERIAL_ID	Input/Output	Device identification signal
6	PORTx_232_TX	Output	RS 232 transmit signal
7	PORTx_232_RTS	Output	RS 232 ready-to-send signal
8	PORTx_232_DTR	Output	RS 232 data terminal read signal
'x' = 1 to 8 and indicates a specific RS-232 port.			

Ethernet Port

This RJ-45 connector connects the Unity Network ID connectivity device to the monitoring network.

Pin #	Signal Name	Type	Description
1	LAN_TRANSMIT+	Output	Network transmit non-inverted differential output
2	LAN_TRANSMIT–	Output	Network transmit inverted differential output
3	LAN_RECEIVE+	Input	Network receive non-inverted differential input
4	NC		
5	NC		
6	LAN_RECEIVE–	Input	Network receive inverted differential input
7	NC		
8	NC		

RS 232 Service Connector

The RS 232 service connector is provided as one asynchronous port for software downloading.

Pin #	Signal Name	Type	Description
1	NC		
2	SP_232_TX	Output	RS 232 transmit signal
3	SP_232_RX	Input	RS 232 receive signal
4	NC		
5	SP_COMMON	Output	Signal common
6	NC		
7	NC		
8	NC		
9	NC		

HyperTerminal

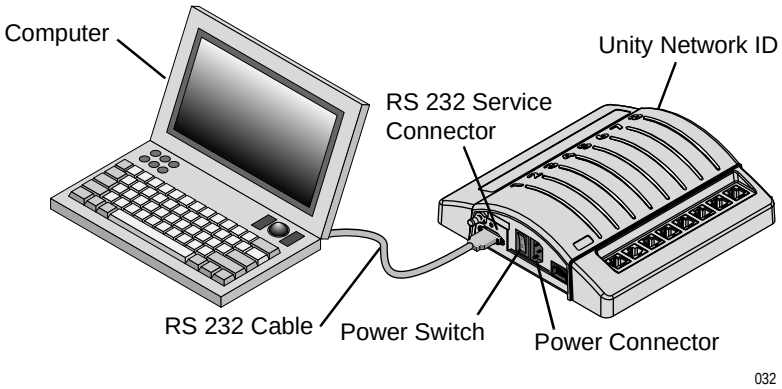
All serial communication with the Unity Network ID, including configuration and programing with the boot service and service menus, is performed through the HyperTerminal application via a serial cable connection to your personal computer or terminal. Use these procedures when necessary to establish a serial communication path to the connectivity device.

Special Equipment

Serial communication with the Unity Network ID requires the following equipment:

1. Computer with the following minimum requirements:
   - Windows 98SE, Windows 2000, or Windows NT,
   - RS 232 serial port, and
   - HyperTerminal program (included with Windows operating system).
2. RS 232 cable assembly.

Connections



1. Connect the RS 232 cable to the 9-pin D-type connector labeled **RS 232** on the connectivity device.
2. Connect other end of RS 232 cable to the 9-pin D-type connector labeled **COM1**, **COM2**, or **SERIAL** at the rear of the computer.
3. Connect a power cord to the power connector on the Unity Network ID connectivity device. Plug the cord into an AC power outlet.
4. Turn on the computer.
5. Turn the power switch on the Unity Network ID connectivity device to the on (“**I**”) position. Verify the switch is illuminated green.

Using HyperTerminal

1. Go to *Start\Programs\Accessories\Hyperterminal* and run the *HyperTerminal* application.
2. Enter a name and choose an icon for the connection. Press the **Enter** key or select *OK*.
3. At the *Connect using:* menu, select the communication port on your computer where you connected the RS 232 cable for communication with the Unity Network ID connectivity device (COM1, COM2, or SERIAL).
4. At the *Port Settings* menu, select the following settings:
   - Bits per second: *9600*
   - Data bits: *8*
   - Parity: *None*
   - Stop bits: *1*
   - Flow control: *None*
   - Press the **Enter** key or select *OK*.

     NOTE

     No prompt will appear on screen.

Boot Service Menu

WARNING
This menu is for use by qualified biomedical technicians only. Misuse of this menu can result in lost or inaccurate patient data or misassociation of data.

Using the Boot Service Menu

1. Complete the RS 232 cable and power connections for your computer and the Unity Network ID connectivity device to run the HyperTerminal application as described in this chapter.
2. Run the HyperTerminal application.
3. Hold down the **B** key while cycling power to the Unity Network ID connectivity device to access the *BOOT SERVICE MENU*.

NOTE
To select individual options from a menu or submenu list, type the number that appears in front of the option, then press the **Enter** key. If you wish to accept a menu default value, press the **Enter** key without changing the value.

The Boot Service Menu provides the following menu options:

WARNING
Duplication of an Internet address on the network will cause lost data on both devices sharing the address. Always consult the installation site's biomedical department for the correct Internet address if the monitoring network being utilized is different than the factory default address.

Boot Service Menu Option	Function
1 Change Ethernet Address	Allows the unit Ethernet address to be changed by authorized factory personnel only. Menu is password protected. Do not attempt to change the Ethernet address.
2 Change Internet Address	Allows you to change the unit Internet address. Consult the biomedical department for the installation site to obtain the correct address.
3 Change Device ID	Allows you to input the unique device ID number from the label on the cover of the unit. This number is programmed into the unit at the factory. Ensure the ID number you input matches the number on the label. For PCB replacement, program the new circuit board with the device ID number shown on the cover of the unit.

Boot Service Menu Option	Function
4 Clear Config Memory	Clears the field configurable memory. The Ethernet and Internet addresses, and Device ID number are not affected. After clearing the configurable memory, the unit will no longer be viewable on the Unity Network. The cleared memory must be re-configured before putting the unit into service. Refer to the configuration information in the Installation section of this manual.
5 Country Selection	Allows you to enable France homologation mode. The factory default setting is off and indicated as *DEFAULT*.
6 View Main Code Error Logs	Displays the main code error log.
7 Set Language	Allows you to select the language for the unit.
8 Exit	Returns to the file server selection.

Service Menu

WARNING
This menu is for use by qualified biomedical technicians only. Misuse of this menu can result in lost or inaccurate patient data or misassociation of data.

Using the Service Menu

1. Complete the RS 232 cable and power connections for your computer and the Unity Network ID connectivity device to run the HyperTerminal application as described in this chapter.
2. Run the HyperTerminal application.
3. Type **service**, and press the **Enter** key to access the *SERVICE MENU*.

NOTE
To select individual options from a menu or submenu list, type the number that appears in front of the option, then press the **Enter** key. If you wish to accept a menu default value, press the **Enter** key without changing the value.

The Service Menu provides the following menu options:

WARNING
Duplication of an Internet address on the network will cause lost data on both devices sharing the address. Always consult the installation site's biomedical department for the correct Internet address if the monitoring network being utilized is different than the factory default address.

Service Menu Option	Function
1 Revisions	Displays the revision of the unit and lists all peripheral devices connected to it. When available, the version of the connected peripheral device is listed.
2 Error Log	Displays the main code error log.
3 Event Log	Displays events recorded by the main code.
4 Location Menu	Opens the Location Menu, where you can change the unit name and bed number.
5 Barometric Pressure	Allows you to change the barometric pressure default.
6 Rwhat Database	Allows you to see all the RWHAT packets on the network in different formats.

Service Menu Option	Function
7 Set the Time and Date	Allows you to set the local time and the date. When off the network, user MUST wait a minimum of 60 seconds before attempting to set the time or date or settings will not be saved.
8 View Parameters	Allows you to view parameter values in a demonstration mode.
9 Change Internet Address	Allows you to change the unit Internet address. Consult the biomedical department for the installation site to obtain the correct address.
10 Exit	Exits the Service Menu.

Error and Event Log Menus

Error Log

This Service Menu option lists errors recorded by the Unity Network ID main code. The headers and abbreviations used in the error log are described below.

Error Log Item	Meaning
Enn	Event number
WHEN	Date and time of error
SEVERITY	Classification of error: 5 = SEVERITY_LOG 6 = SEVERITY_HALT 7 = SEVERITY_RESET 8 = SEVERITY_PLANNED_RESTART
CODE	Error code
PROCESS	Names the process that produced the error
SR	Status register
PC	Program counter
HP	Heap counter
USP	User stack pointer
SSP	Super stack pointer

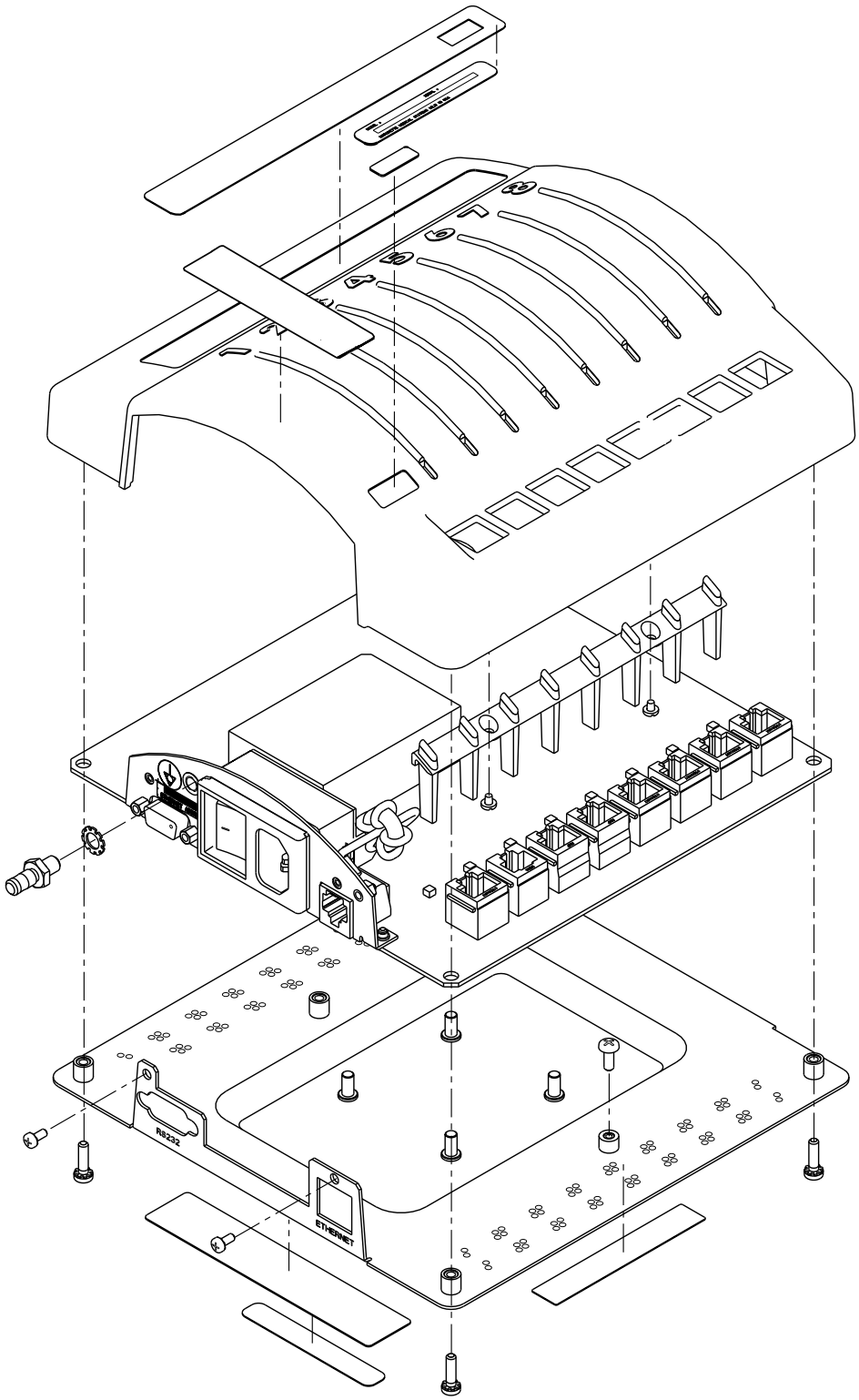
Event Log

This Service Menu option lists events recorded by the Unity Network ID main code. The headers and abbreviations used in the event log are described below.

Event Log Item	Meaning
NO.	Event number
DATE	Date of the event
TIME	Time of the event
CODE	ID number for the event
DATA	Provides further information about the event.
DESCRIPTION	Provides a description of the event.

Exploded View

This drawing is provided for reference only. Not all parts shown are serviceable. See the Technical Replacement Units chapter for parts availability.



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